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AN ANALYSIS OF SOME NECESSARY QUALITIES OF TEACHERS.
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TEACHER CHARACTERISTICS WERE STUDIED IN TERMS OF RELATIONSHIPS AND RELEVANCY TO EFFECTIVE TEACHING, INCLUDING SUCH TRAITS AS KNOWLEDGE OF SUBJECT MATTER, SOCIAL INTELLIGENCE, KNOWLEDGE OF EDUCATIONAL PSYCHOLOGY, ACHIEVEMENT AND AFFILIATION MOTIVES, PROFESSIONAL ATTITUDES, AND KNOWLEDGE OF ABILITIES AND BACKGROUNDS OF THEIR STUDENTS. DATA COLLECTION INSTRUMENTS WERE GATHERED OR CONSTRUCTED FOR ASSESSING THESE CHARACTERISTICS AND THEIR INTERRELATIONSHIPS. THE DATA WERE OBTAINED FOR APPROXIMATELY 100 EXPERIENCED AND 120 STUDENT TEACHERS. RESULTS FOR BOTH GROUPS WERE THEN CORRELATED TO ESTABLISH SIMILARITIES THAT WOULD SUGGEST SOME STABILITY OF TRAIT STRUCTURE. THE EXPERIENCED AND STUDENT TEACHERS' WITH SPECIALITIES IN ENGLISH, SOCIAL STUDIES, SCIENCE, AND MATHEMATICS WERE ALSO CROSS-COMPARED. INTERCORRELATIONS OF THE CHARACTERISTICS AND THEIR SUBCOMPONENTS OBTAINED BY ANALYSIS PROVED TO BE MUCH LOWER THAN HAD BEEN ORIGINALLY EXPECTED. HOWEVER, THE FACTOR STRUCTURES DERIVED BETWEEN THE EXPERIENCED AND STUDENT GROUPS OF TEACHERS SHOWED GREAT SIMILARITY. IN ADDITION, THE TEACHERS WHEN CLASSIFIED BY SPECIALITY SHOWED NO SIGNIFICANT DIFFERENCES. (JM)

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AN ANALYSIS OF SOME NECESSARY QUALITIES OF TEACHERS

Cooperative Research Project No. 453

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I. INTRODUCTION

Purpose of the Study

Teaching is a complex activity carried on in a complex environment. It involves the interaction of innumerable traits of the teacher and innumerable traits of his students. These interactions in turn are subsumed in a milieu of interacting environmental factors.

The purpose of this study was to examine some traits of the teacher which, on a meaningful basis, seemed to be important components of the teaching-activity complex. Through measurements of these traits of experienced and student teachers, this investigation has sought to assess data-gathering instruments which may describe these components, to determine the structure of interrelationships among them, and to evaluate any likenesses or differences between experienced and student teachers. It was hoped that the structuring of the relationships would be the same for both student and experienced teachers. If this were true, the marker variables defining these structures might serve a useful purpose in future validation studies.

Historical Background

The immediate history of research pertaining to the teacher complex is replete with examples of diligent efforts to identify effective teachers. Barr (1948) summarized approximately 150 studies made during the first half of the twentieth century. Castetter (1954) prepared an annotated bibliography describing 208 additional studies. Morsh and Wilder (1954) examined more than 900 references to such studies and abstracted 360 of them for analysis.

In the third instance, the reviewers found that seven different criteria had been used for teacher evaluations: self-ratings, teacher appointment blanks, administrative ratings, peer ratings, student ratings, systematic observations, and student gains. They further found that at least 20 different predictors had been used in an effort to identify antecedents or concomitants of teaching success: namely, intelligence, education, scholarship, age, experience, knowledge of subject matter, professional information, extracurricular activities, general culture, socioeconomic status, sex, marital status, teaching aptitude, interest in teaching, voice and speech characteristics, photographs, statistical analysis of instructor abilities, opinion studies of instructor personality, causes of teacher failure, and personality tests.

The results of these varied studies have been criticised in several ways. Morsh and Wilder suggested that many were of the "armchair" opinion type with little empirical validation, that most of the criteria showed little significant relationship to teacher success, and that the predictors were highly inconclusive indicators of teaching ability. Ryans (1960, p. 370) struck a similar note by saying that no common agreement had been reached about what constitutes a "good" or "bad" teacher. Barr (1961) likewise pointed out that the concept of teaching efficiency nowhere is well defined. Apparently, teaching means many different things to different people and, probably, the teaching activity varies from person to person and from situation to situation. Views concerning efficient teaching are exceedingly diverse among educators. Thus, with opinions so varied, each person may be said to have a more or less private system of evaluation all his own.

Current Importance

Although there seems to be as yet no commonly agreed-upon definition of teaching efficiency, the identification of the "good" teacher is of ever-increasing importance. That superior learning is a function of effective teaching has long been axiomatic. This being the case, American educators, confronted with a tremendous growth in the secondary school population and with the need for recruiting 50,000 new teachers annually (U. S. Department of Labor, 1959, p. 40), have become increasingly concerned with the problem of teacher recruitment, selection, and education.

To add to these already complex problems are the exacting demands of an atomic-age society and the clamor for an improved program of secondary education (Conant, 1959, p. xii). In the face of these complexities some have even questioned if the quality of public education can be maintained, let alone be improved under these circumstances (Edson & Glotzback, 1957). Certainly, any genuine solution to this involved situation requires an intensive re-examination of those factors related to the effective teaching complex.

Criteria of Teaching Effectiveness

Mitzel (1960) classified criteria for teacher-effectiveness research under the headings of product, process, and presage criteria. He admitted that after 50 years there were no commonly agreed-upon standards for such research. However, he argued that educational products in the form of student gains, growth, and changes were essential criteria in determining teacher effectiveness. He implicitly agreed with Cureton (1951) and Ebel (1955) that teacher evaluation should not only be in terms of product but also should include those student goals immediate to the completion of school. He disagreed with Remmers (1952) who had proposed that teacher effects on school operations and school-community relations be included in a product criterion. Mitzel held that such effects might be of secondary value but that they did not represent the primary intent of the school.

Barr (1947, pp. 147-199) previously had described those educational objectives against which student goal-achievement could be measured. Bloom (1954) likewise prepared a detailed list of educational objectives. But all of this emphasis on product criteria as the major factor in determining teacher effectiveness, although admittedly essential, tends to beg the issue. As Ryans (1957) points out, this relevance of student goal-achievement as a teacher product may be more apparent than real because of the difficulty of identifying and partialing out the contribution made by the teacher to a particular product. The determiners and the facets of student behavior are numerous. Thus, the identification of only one teacher behavior as being antecedent to any one element in student growth may be an oversimplification of the whole problem. Furthermore, it is conceivable that effective teaching might not be manifest in immediate student growth but might have latent effects which become operative long after the student has left the environment of the particular teacher inducing this change. These considerations suggest that we have much to examine before we can develop a well-defined theory of the teaching activity.

Mitzel, in evaluating the benefits of process-criteria, advocated the measurement of teacher classroom behavior, student behavior, and the concomitant interaction behavior. If and when they can be measured against the educational product, they can become a means of determining teacher effectiveness. Theoretically, this is a logical approach, but it overlooks the immense difficulty of securing such measurements and, particularly, the lack of unanimity regarding the behaviors to be measured. Ryans (1960) found it necessary to develop highly involved and continuing procedures in order to eliminate bias on the part of rater-observers, a method generally impractical except under the most exceptional and controlled circumstances. Ryans further stated that such evaluations were often confused by a lack of general agreement about the nature of teaching effectiveness. It would seem, therefore, that the selection of process-criteria provides no simple solution for determining effective teaching.

Mitzel severely criticized the use of presage or predictive criteria as a means of determining teacher effectiveness on the grounds that they are logically removed from the goals of education, that they have but assumed or conjectured relationships to other criteria, and that they lack chronological proximity to the interplay of behavior in the classroom. He suggested that they be termed "pseudo-criteria" and be used as little as possible. Of the many types of variables discussed, such as personality attributes, teacher-training evaluations, teacher-achievement examinations, and in-service teacher characteristics, he intimated that they bear little relationship to the type of teacher behavior productive of educational-goal achievement.

Ryans (1957) suggested that much of the weakness of previous research with prediction variables, that is, their consequent low correlation with process and product criteria, is related to an assumption that teacher effectiveness is unidimensional. He hypothesized that teacher effectiveness is multidimensional, and that any genuine identification of the effective teacher can be made only by discovering the interrelated patterns of teacher characteristics. Thus, teacher abilities, interests, emotional-social adjustments, familial experiences, and community relations can conceivably reveal measurable patterns indicative of degrees of different kinds of teacher effectiveness.

Therefore, it would seem that, to be profitable, teacher research must not only include the use of product and process criteria but also a multidimensional approach to those teacher characteristics which may be considered presage or predictive criteria.

In the light of the foregoing discussion, a factor study of important teacher traits would seem to be a desirable approach to this complex problem of identifying not only the effective teacher but also the prospective teacher. The general theory underlying Ryans' study (1960) has revealed some significant clues for such an effort. The concept of teacher-factor patterns resulting from the interaction of varied traits provides the rationale for experimentally determined predictive criteria of effective learning. The primary task becomes one, therefore, of determining those factors which reliably describe teacher traits that logically are related to the teacher-trait complex. Further study then could determine the relationship existent between these predictive factors and learning products, such as student gains.

Teacher Traits Selected for This Study

As indicated above, the purpose of this study has been to examine traits which seem logically a part of the teacher-trait complex. Among the many traits which might have been selected, six seem to be of major importance. They have, therefore, been chosen for examination.

1. Knowledge of Subject Matter. Educators in general have assumed that teaching effectiveness is a function of subject-matter knowledge, especially so for secondary teachers. Related studies, however, have not always demonstrated a positive relationship. Morsh and Wilder's analysis (1954, p. 85) of 20 such investigations revealed correlations ranging from -.69 to +.58 between various criteria of teaching effectiveness and knowledge of subject matter. These reviewers observed that "whether or not knowledge of subject matter is related to instructor competence is a function of the particular teaching situation." They further suggested that "negative relationships found in some of the studies indicate that too much knowledge on the part of the teacher may result in teaching 'over the heads' of the students." They did discover, however, that among teacher failures, the great majority were in the lowest 10 per cent of those rated on subject matter.

Thus, it would seem that, although high proficiency in subject-matter fields is no guarantee of teaching success, the latter cannot be achieved without reasonable competency in a teaching specialty. Any comprehensive study of teacher traits, therefore, would logically include a measure of subject-matter preparation. Accepting this assumption as valid, this study has included measures of ability to use the English language, of general knowledge and ability to understand reading materials in social studies and science, and of ability to use mathematical processes in problem-solving.

2. Social Intelligence. Social intelligence, as an ability to exercise social insight and judgment in classroom situations, is commonly accepted by both professional educators and the sponsoring public as being an essential component of the teacher personality. Barr (1948, pp. 322-388), in discussing teacher factors related to pupil growth, refers repeatedly to rapport between teacher and pupils, social understanding, social qualities, and social sensitivity. Ryans (1960, p. 382) similarly categorized one of the three factors which best describe teacher characteristics as "warm, understanding, friendly teacher behavior." In fact, numerous teacher-trait studies, covering a 50-year period (Morsh & Wilder, 1954, pp. 108-112), list fairness, tactfulness, kindliness, and understanding as being among the important teacher traits. Thus, it would seem that

regardless of terminology teachers are expected to possess substantial degrees of social intelligence, particularly in those pupil relationships demanding insightfulness and judgment.

Whether social intelligence is distinct, innate, general, or acquired is outside the scope of this study, but a brief consideration of the issue seems to be in order. E. L. Thorndike (1920) and his followers (Moss, 1931; Hunt, 1928; Chapin, 1939) have made a strong case for social intelligence as a distinct mental trait. On the other hand, this view has been challenged by many investigators (McClatchy, 1929; Strang, 1930; R. L. Thorndike, 1936; Burks, 1937). The opposition views have been summarized by Cronbach (1960, p. 319) in these words: "After 50 years of intermittent investigation, however, social intelligence remains undefined and unmeasured." It may be that what has been termed social intelligence is but a facet of social development which has been acquired by imitation (Miller & Dollard, 1941) under favorable developmental conditions. Whatever the solution to this perplexing problem, it is quite obvious that social intelligence, defined as insightfulness and judgmental ability in social situations, is essential to the establishment of effective teacher-pupil relationships.

3. Knowledge of Educational Psychology. A knowledge of educational psychology is both logically and operationally related to the teaching complex. Pupils are expected to acquire knowledge, values, and skills in problem-solving, communicating, reasoning, and interpreting. Before a teacher can effectively guide such learning activities, he must possess adequate knowledge and understanding of the psychological bases of human development and behavior, and he must have acquired at least a minimum skill in using appropriate techniques for studying a pupil's capacities, interests, and degrees of readiness to learn. Bernard (1954, p. 7) suggests that teachers should understand the nature and characteristics of the learner, the nature of the learning process, the manner in which these processes may be facilitated by the teacher, and the scientific principles underlying the procedures employed in formal education. Only as the teacher becomes knowledgeable about growth, development, and the learning process of present day theories can he hope to effectively direct the learning process.

All of these requirements demand teacher familiarity with research concerning the effect of biological and social heritage upon the learner. They will likewise demand teacher familiarity with maturation factors, learning procedures, evaluative techniques, incidental learnings, emotional factors, and attitude changes as they affect learning (Crow, 1956, p. 14). Having acquired such insights, the teacher will then be better able to determine the particular goals, materials, and methods of teaching.

4. Professional Motivation. Assuming that all behavior is motivated and that the type of behavior is influenced by the motive involved, it would follow that teacher motives are important factors in the teacher-pupil relationship (Cattell, 1957, p. 440; Schrier, 1957). It would also follow that desirable teaching is a function of constructive professional motivation (Lewin, 1939; Anderson, 1946; Precker, 1952; Davitz, 1955).

Among the many motives relevant to human behavior, two are highly prized by the so-called middle-class society: achievement and affiliation. These may be defined as a desire to succeed and a desire to be accepted by one's associates. School administrators seem to find both needs important in the motivational framework of the teacher. Even parents seem to consider evidence of the desire for success and socialization as an index of the adequacy of an educational program.

In view of the widespread recognition of the importance of motivation to teaching effectiveness, particularly of the achievement and affiliation motives, it has seemed wise to assess these two motives in this study.

5. Educational Attitudes. Bernard (1954, p. 25) says that the attitudes one holds toward one's work are as important as the actual working conditions. Crow (1956, p. 39) asserts that teacher attitudes are conditioners of learning. They contribute toward the learner's desire for success and are closely associated with the degree of learning that actually occurs. In fact, the teacher's attitude will likely determine the pupil's reaction to the learning task, the amount of effort he puts forth to achieve proficiency, and his use of the learning product. Consequently, teacher attitude becomes of major concern to any examination of the teaching-activity complex.

But what are attitudes? They have been defined in many ways (Nelson, 1939; Sherif & Cantril, 1945; McNemar, 1946). For educational purposes Cronbach (1954a, p. 326) seems to present the most succinct definition: "An attitude is . . . the meanings that one associates with a certain object (or idea) and which influence his acceptance of it." Attitudes may be incomplete and inconsistent, and they tend to be highly generalized, but they seem to influence behavior. Thus, a teacher's attitude toward his pupils, toward his administrative leadership, his community, and his profession will markedly affect his teaching behavior and, in consequence, the learning product. The presence or absence of constructive attitudes toward the teaching situation will, therefore, influence pupil learning in either positive or negative fashion.

Because of the above considerations, therefore, this study has included a measurement of educational attitudes among the traits for examination, particularly as they relate to pupils and to teaching as a profession.

6. Knowledge of Students. Every learner is different. He differs from his fellows in mental ability, interests, social effectiveness, and in the sort of errors he will make. This being the case, the teacher must acquire a comprehensive knowledge of each pupil to direct individual learning activities effectively. In fact, it is quite possible that lack of knowledge concerning the individual pupil is one of the greatest weaknesses of the teacher.

Because learning readiness and achievement are functions of mental development, it is important that the teacher be aware of each pupil's mental ability in order to provide meaningful curricular activities. Inasmuch as learning behavior is motivated behavior (Bernard, 1954, p. 19) the teacher should also attempt to relate known pupil interests to the desired learning. Bernard even goes so far as to say (1954, p. 255) that the teacher should supplement knowledge of pupils obtained in the classroom by visiting the parents, reading reports of other teachers' visits, and/or talking with each child individually. Crow concurs (1956, p. 310) in these views by saying that a teacher can help his pupils by knowing them individually and, if genuinely interested in them, will find time to discuss with each one any problems of personal consequence.

Other writers have variously urged the importance of teachers' knowledge of students. Corey (1941) states that probably the most important aspect of technical teaching competency is the teacher's willingness and ability to learn about children in such way that his knowledge will function in the teaching process. Later (1955) he said that, if asked to recommend what might be done to assure a curriculum which would more nearly meet the needs of adolescents, he would say, "Do everything possible to encourage teachers and administrators to learn as much as they can about teen-age boys and girls." However, in spite of the recognized importance of this teacher trait, research in this area is still meager and the need great.

In view of this conviction of the importance of the teacher's knowledge of his students, several aspects of such knowledge have been incorporated in this study.

Delimitations of the Study

As indicated above, the purpose of this study has been to examine certain traits of experienced and student teachers. The study has been delimited, however, in several ways. First, examination of the selected traits listed above has been restricted to experienced teachers within Arkansas, or its immediate environs, and to student teachers at the University of Arkansas. Second, no consideration has been given to any preparatory prerequisites for teacher trainees. Third, any value judgments regarding curricula or methods of teacher education have been viewed as important but beyond the scope of this study. Fourth, no effort has been made to identify either the effective or ineffective teacher. And fifth, investigations have been confined to describing and comparing specific samples of experienced and student teachers. Any questions pertinent to these limiting features may well occupy the attention of future research endeavors.

II. PROCEDURES

As previously indicated, the primary purpose of this study was to examine the structure of relationships of selected traits of experienced and student teachers. The traits selected for consideration were based on those which previous investigators in teacher education found or believed to be important characteristics among the countless characteristics of teachers available for examination.

Questions to Be Answered

Six questions deriving from the general problem of this study seem to warrant detailed investigation:

1. What factors will reliably describe certain selected variables for experienced teachers?
2. What factors will reliably describe certain selected variables for student teachers?
3. Does the examination of these factor structures indicate psychological plausibleness?
4. Are these descriptive factors for experienced teachers similar to those for student teachers?
5. How do student teachers compare with experienced teachers on certain selected variables?
6. How do mathematics, social studies, English, and science subgroups of student teachers compare with similar subgroups of experienced teachers for these selected variables?

Secondary Aspects of the Study

In the development of the study, it was found necessary to construct data-gathering instruments for measuring some of the traits under investigation. The construction of data-gathering devices for assessing achievement-affiliation motives and professional attitudes resulted in two secondary, but elaborate, studies oriented toward these characteristics and the data-gathering instruments for measuring them. These studies will be treated individually in Chapters IV and V.

Description of the Samples

The teacher groups selected for this study consisted of subjects who were teaching at the junior or senior high school level, and who had a primary or secondary teaching field in one of the four basic areas: English, social studies, science, and mathematics.

Experienced Teachers

This sample consisted of 102 college graduates having one to eleven years' teaching experience who were teaching in Arkansas--several were teaching in adjacent states--during the school year 1959-1960. The subjects included teachers attending the University of Arkansas during the summers of 1959 and 1960; some who were recruited through the cooperation of Arkansas public school superintendents during the school year 1959-1960;

and some who attended Arkansas Agricultural and Mechanical College, Arkansas Polytechnic College, Arkansas State College, and Henderson State College during the summer of 1960.

Criteria for selecting teachers for participation were: an earned degree, full state teacher certification for teaching specialties, one to eleven years' experience in the primary or secondary teaching area, and current teaching at least half-time in a specific teaching area. The necessary information for selecting teachers was obtained from a biographical inventory constructed for this purpose.

The composition of this sample classified according to school size, sex, and teaching specialty is presented in Table 1.

Student Teachers

This sample consisted of 122 student teachers enrolled for practice teaching in the College of Education, University of Arkansas, during the school year 1960-1961.

Criteria for participation in this study involved candidacy for a bachelor's degree at the University of Arkansas, the completion of the academic and professional education courses prerequisite to practice teaching, and enrollment in practice teaching. The necessary information was obtained from a biographical inventory constructed for this purpose.

The composition of this sample classified according to school size, sex, and teaching specialty is shown in Table 2.

Traits Investigated

Twenty variables were selected for the examination of the experienced-teacher group. The first 14 of these variables were also selected for examination of the student-teacher group, thus making possible a direct comparison of experienced teachers and student teachers. These variables are herewith briefly defined and coded numerically for later reference. The variables are:

1. Knowledge of Subject Matter. This represents academic ability for the areas of teaching specialty, as measured by a United States Armed Forces Institute Test.
2. Social Intelligence. This represents an ability to make judgments regarding social situations and human behavior, as measured by the George Washington University Series Social Intelligence Test.
3. Knowledge of Educational Psychology. This represents knowledge of the principles of human learning, as measured by a test derived from Cronbach's *Instructor's Handbook, Educational Psychology* (1954b).
4. Achievement Motive. This represents the degree to which achievement motives dominate a teacher's activity, as measured by an Achievement-Affiliation Scale.

Table 1

Sample of 102 Experienced Teachers

School Size	Sex	Subject Matter Specialty				Total
		English	Social Studies	Science	Mathematics	
11-100	M	2	20	9	8	39
	F	7	0	1	1	9
101-200	M	1	6	4	7	18
	F	4	5	3	4	16
201-300	M	0	1	0	2	3
	F	0	0	0	2	2
301-400	M	0	1	1	1	3
	F	3	2	1	1	7
401-500	M	0	3	0	1	4
	F	1	0	0	0	1
Total	M	3	31	14	19	67
	F	15	7	5	8	35

Table 2

Sample of 122 Student Teachers

School Size	Sex	Subject Matter Specialty English	 Social Studies	 Science	 Mathematics	Total
11-100	M	1	9	11	4	25
	F	30	9	4	9	52
101-200	M	2	7	6	1	16
	F	21	7	1	0	29
Total	M	3	16	17	5	41
	F	51	16	5	9	81

5. Affiliation Motive. This represents the degree to which affiliation motives dominate a teacher's activity, as measured by an Achievement-Affiliation Scale.
6. Neutral Score. This represents the degree to which motives other than achievement and affiliation dominate a teacher's activity, as measured by an Abhievement-Affiliation Scale.
7. Professional Attitudes. This represents a teacher's attitude toward pupils and toward teaching as a profession, as measured by a Teacher Attitude Inventory (Short Form).
8. Knowledge of Students' Mental Abilities. This represents the teacher's knowledge of the relative brightness of his students, as measured by an inventory prepared for that purpose.
9. Knowledge of Students' Interests. This represents familiarity with a student's interests through classroom association, as measured by an inventory prepared for that purpose.
10. Knowledge of Students' Socio-Economic Status. This represents knowledge about a student's parental occupation, as measured by a questionnaire prepared for that purpose.
11. Knowledge of Students. This represents general knowledge of students, as measured by a composite score for inventories and questionnaires, 8-10.
12. Number of Students. This represents the number of students on which each teacher based his judgments pertaining to the preceding measures, 8-11 inclusive.
13. Sex of Teacher. This represents the sex of each teacher, determined from the teacher biographical inventory.
14. Size of School. This represents the size of the school in which each teacher served, computed by average grade enrollment.
15. Attitude toward Pupils. This represents the teacher attitude toward pupils, as measured by a subscale of the Teacher Attitude Scale, Form II, prepared for this study.
16. Attitude toward Administration. This represents teacher attitude toward the school administration, as measured by a subscale of the Teacher Attitude Scale, Form II, prepared for this study.
17. Attitude toward Profession. This represents teacher attitude toward the teaching profession, as measured by a subscale of the Teacher Attitude Scale, Form II, prepared for this study.
18. Attitude toward Community. This represents teacher attitude toward the school community, as measured by a subscale of the Teacher Attitude Scale, Form II, prepared for this study.
19. Total Attitude Scale. This represents teacher attitudes, as measured by the total score on the above four scales.
20. Years of Experience. This represents years of teaching experience for experienced teachers.

Description of the Data-Gathering Instruments

U. S. Armed Forces Institute Tests

For measuring the teacher's knowledge of subject matter of the area in which he or she was teaching, college level forms of the United States Armed Forces Institute Tests of General Educational Development were used. These were:

English:	Test 1, Correctness and Effectiveness of Expression, Form B.
Social Studies:	Test 2, Interpretation of Reading Materials in the Social Studies, Form B.
Science:	Test 3, Interpretation of Reading Materials in the Natural Sciences, Form B.
Mathematics:	Examination in Algebra, Form B.

The complete battery was developed originally by the United States Armed Forces Institute (1944) to provide a more adequate basis for the educational and vocational guidance of those who served in the Armed Forces. Form A was developed to measure achievement on the high school level, and Form B was developed to measure achievement on the college level. The American Council on Education subsequently requested Dressel and Schmid (1951) to prepare a comprehensive evaluation of this test battery. They found the test items to be highly discriminating when considered against total scores. Although the items seemed to be somewhat easier, at least in the eyes of the evaluators, than is commonly desirable for college achievement tests, the widespread use of the tests reveals that "there can be no question but what the total effect has been beneficial both in terms of immediate results and in terms of developments on which to build for the future."

The college level norms were established by administering both high school and college level forms to similarly large groups of representative college students. The examiner's manual reveals no information about the reliability of the test battery. However, Dressel and Schmid (1951) report split-halves reliability coefficients of .85 to .94 for two classes of 300 U.S. Air Force Officers at the Air University.

Because of the length of the original tests and the consequent difficulty of administration to the teacher samples, the investigators shortened each subtest to include only the first 57 items for English Expression, the first 48 items for Reading Materials in Social Studies, the first 45 items for Reading Materials in Natural Science, and the first 31 items in the Algebra Examination. The raw scores for each subsample of teaching-area specialty were standardized on a 20-point scale to yield a rectangular distribution. The estimated split-halves reliabilities for these shorter tests ranged from .74 to .89.

The evident reliability of the tests and their general acceptance as measures of college level ability suggest that this USAFI test battery is adequate to provide measurements of a teacher's knowledge of subject matter.

George Washington University Series Social Intelligence Test: SP Edition (1947).

Originally published in 1927 to measure certain factors related to dealing with people and the carrying on of social relations, the test contained six subtests: Ability to Remember Names and Faces, Social Information, Judgment in Social Situations, Recognition of Mental States from Facial Expression, Mental State of Person from His Words, and the Observation of Human Behavior. A second form of this test was published in 1929, and a revised form, utilizing the better items of earlier forms, was published in 1931. A revised form of the second edition (1949) has been issued in five parts: Judgment in Social Situations, Recognition of the Mental States of the Speaker, Memory for Names and Faces, Observation of Human Behavior, and Sense of Humor. Two shorter forms have also been developed for those having limited testing time. The short edition contains four parts: Judgment in Social Situations, Observation of Human Behavior, Recognition of Mental State of Speaker, and Sense of Humor. The special edition (SP) contains only two parts: Judgment in Social Situations and Observation of Human Behavior.

The reliability estimates for this test have always been rather high. On the original test, a test-retest reliability of .89 for 100 college sophomores and a split-halves reliability of .88 for 129 college students were reported by Hunt (1928). A validity coefficient of .61, when measured against an Ability to Handle People Rating Scale, was also reported by Hunt (1928). Flemming and Flemming (1946) reported correlations of .57 and .94 for GWSI scores with satisfactory Sales Performance Scale Ratings for two groups of salesmen. However, other investigators have seriously questioned the validity of the test. Burks (1937) reported validity coefficients of -.26 to -.04 when measured against the subscales of a Success in Personal Relationship Scale for Sorority Women. Thorndike and Stein (1937) reported correlations of .25 to .75 when measured against tests of abstract intelligence. They concluded that the George Washington University Series Social Intelligence Test was a measure of general intelligence rather than one of a unitary social intelligence trait. Wechsler (1958, p. 75) similarly argued that social intelligence is but general intelligence applied to social situations.

Without attempting to pass judgment on the merits of these conflicting views concerning social intelligence and the George Washington University Series Social Intelligence Test, it was believed that the test items used in the Special Edition, at least for the purpose of this study, do measure those kinds of social judgment and insights needed by classroom teachers. The examiner's manual reports a split-halves reliability coefficient of .72 for 120 adult high school graduates. Based on test raw scores for 236 Arkansas high school teachers, this investigator found split-halves coefficients of .65, .79, and .72 for the subtests, Judgment in Social Situations, Observation of Human Behavior, and for totals, respectively. This being the case, this test seems adequate to measure the social intelligence of teachers as defined by social judgment and insight. Test results have been reported as employed adult percentile ratings derived from norms published in the examiner's manual.

Knowledge of Educational Psychology Test

This 70-item five-choice test was derived from the Instructor's

Handbook for Educational Psychology by Cronbach (1954b). Initially, the investigator tried to obtain a commerical test on knowledge of educational psychology. No satisfactory test was found; consequently the complete list of test items, prepared for use with Cronbach's Educational Psychology, was selected as representative of the kinds of knowledge relative to the learning process which seemed most desirable for classroom teachers. This list of items was then presented to three independent judges for evaluation with the request that each one choose those items which would best measure a teacher's knowledge of educational psychology. The 70 items, on which the judges independently concurred, were then included in the Educational Psychology Test used for this study.

An examination of scores on this test for 212 Arkansas teachers revealed marked homogeneity. This apparently resulted from a high proportion of right scores on test items pertaining to an operational knowledge of the learning process, and to a low proportion of right scores on test items pertaining to information more closely related to the formal requirements of Cronbach's textbook. However, in spite of this homogeneity, the split-halves reliability was found to be .58. This was estimated to be significant at the 0.1 per cent level. Therefore, in view of the operationally significant information provided by the test, the investigators concluded that the Knowledge of Educational Psychology Test could adequately measure a teacher's knowledge of educational psychology. Test results have been reported in raw-score form. A copy of this test may be found in Appendix A.

Achievement-Affiliation Motive Scale

This 30-item forced-choice scale was developed by Van Zandt (1961) as one phase of this study (see chapter IV). The items were designed to assess achievement and affiliation drives of teachers, particularly as they were related to the teaching profession. Each test item represented a school situation to which a teacher could be expected to project an image of his motives. Three explanatory responses, cued to achievement, affiliation, and neutral reactions, were selected for each test stem from a pool of response possibilities by seven psychologists at the University of Arkansas, each one judging independently.

Of the three possible responses for each test-item situation, teachers were asked to choose the suggested response with which they most agreed. The investigator assigned a value of one to the item response with which the teacher most agreed and then summed for items to provide raw-score totals for achievement, affiliation, and neutral reactions. These scores were then considered as indicating the degree to which achievement and affiliation drives were operative.

The neutral score is intended to indicate the degree to which motives other than achievement and affiliation are functioning. However, not much psychological meaningfulness can be attributed to this score. The neutral items merely served as "dummy" responses to ensure more precise assessment of the other two motives. Even so, the neutral score was an outcome obtained in the measurement of the achievement and affiliation motives and, accordingly, was included as a variable for exploratory purposes.

Various scoring schemes were examined. For this aspect of the study, it was finally decided to use the count method; that is, the achievement, affiliation, and neutral scores were arrived at by a simple count of the number of responses selected. Further discussion of these variables is found in Chapter IV.

Two measurements, with a one-month interval, were obtained on this test for 120 Arkansas teachers. Test-retest reliabilities were then computed with resultant reliability estimates of .59, .44, and .68 for achievement, affiliation, and neutral responses, respectively. This scale may be found in Appendix B.

Teacher Attitude Inventory, Form II

For measuring professional attitudes, a 55-item, Likert-type scale was developed by North (1961) as one phase of this study (see chapter V). The items form 14 subscales, classified according to 4 teacher-attitude areas. The items in each subscale were selected from an 80-item pool by means of the DuBois homogeneous keying technique (1952).

The scales, classified by teacher-attitude areas are: Attitude toward Pupils; Attitude toward Administration; Attitude toward Profession; and Attitude toward Community.

Test-retest reliabilities, for a one-month interval, were obtained for 120 Arkansas teachers on each of the 14 subscales and for each of the attitude areas. The coefficients for areas were: Attitude toward Pupils, .53; Attitude toward Administration, .78; Attitude toward Profession, .77; and Attitude toward Community, .68.

In view of the fact that student teachers would have had little opportunity to form attitudes toward either school administrations or school communities, a short-form Teacher Attitude Inventory was constructed by deleting those scale items representative of such attitudes. The resultant inventory contained 35 items. Although, for this shortened form, response items measured both attitude toward pupils and toward teaching, only a composite score was computed. It provides a measurement of professional attitudes. This short-form version was included as a variable for both the experienced and student teacher correlation matrixes. A corrected split-halves coefficient of .84 was found for 102 experienced teachers. Further discussion of construction of this inventory is found in Chapter V.

Knowledge-of-Students Scores

1. Knowledge of Students' Mental Abilities. Each teacher was given a form on which he was asked to identify 10 of his students by name, 2 for each of the following levels of scholastic ability: superior, bright, average, below average, and inferior. The teacher was instructed in making this decision to consider students for five levels of

intelligence (IQ, scholastic ability, or mental brightness) as follows:

Superior:	upper 10% of all students in the U.S.
Bright:	next 20% of all students in the U.S.
Average:	next 40% of all students in the U.S.
Below Average:	next 20% of all students in the U.S.
Inferior:	lowest 10% of all students in the U.S.

The rankings of these students were then collated with their aptitude scores on standardized tests which were obtained from school-office records. With these aptitude scores as a criterion, students were assigned appropriate ranks of scholastic ability comparable to the previously described categories. A teacher whose rank-judgments for each of the 10 students were identical with their criterion ranks was given a score of 24. For each student-rank deviation in teacher judgment from the criterion, the teacher was given an error score of one. The difference between 24 and the sum of the error scores constituted the teacher measure of knowledge of his students' mental ability. To equate scores for teachers who may have been unable to provide judgments of mental brightness on two students for each level of intelligence with those for teachers who had been able to provide all of the requested information, each "difference score" was appropriately weighted by the number of students for which judgments had been reported. The weighted "difference score" was then adjudged to be a measure of the teacher's knowledge of student mental ability.

2. Knowledge of Students' Interests. The teachers were given a form on which they were asked to indicate the primary vocational-avocational interest of each of the 10 students whom they had previously judged as to mental ability. They were requested to obtain no supplemental information from their students but to make judgments on the basis of previously acquired information.

A questionnaire was then sent to each of the 10 students with a request to state his primary interest. The responses of teachers and students were matched, and a score for each teacher was obtained in the following manner:

a. The student's response was used as the criterion.

b. The student-interest areas were classified as: outdoor, mechanical, computational, scientific, persuasive, artistic, literary, musical, social service, and clerical (Kuder Vocational Preference Record, Form C).

c. The teacher was given a score of "two" if his response was the same as the student's response.

d. The teacher was given a score of "one" if his response was different from the student's response but in the same interest area.

e. The teacher was given a score of "zero" if his response was not in the interest area indicated by the student.

f. The teacher's knowledge-of-student interests score was computed by summing interest scores for all reported students.

g. To equate scores for teachers who had provided judgments of student interests for fewer than 10 students with those for teachers who had provided all of the requested information, each teacher's "interests" score was appropriately weighted by the number of students for whom judgments were reported. The weighted "interests" score was then adjudged to be a measure of the knowledge of students' interests.

3. Knowledge of Students Socio-Economic Status. An adequate assessment of each student's socio-economic status proved more complex than was originally expected. It was finally decided to use the father's occupation as an index of this status. The teachers were given a form on which they were asked to indicate the father's occupation for each of the 10 students whom they had previously judged as to mental ability and vocational-avocational interests. They were requested to secure no supplemental information from their students but to make judgments on the basis of previously acquired information.

A questionnaire was then sent to each of the 10 students with a request to state his or her father's occupation. The responses of the teachers and students were matched, and a score for each teacher was obtained in the following manner.

a. The student's response was used as the criterion.
b. The fathers' occupational areas were classified as professional-managerial, clerical-sales, agricultural-forestry, skilled labor, semiskilled labor, and unskilled labor. (Dictionary of Occupational Titles, Vol. I, 1949).
c. The teacher was given a score of "two" when his response was the same as the student's response.
d. The teacher was given a score of "one" when his response was different from the student's response but in the same occupational area.
e. The teacher was given a score of "zero" when his response was not in the same occupational area as the student's response.
f. The teacher's knowledge of students' socio-economic status score was computed by summing "socio-economic status scores" for all reported students.
g. To equate scores for teachers who had provided judgments of students' socio-economic background for less than 10 students with those of teachers who had provided all requested information, each teacher's "socio-economic status score" was appropriately weighted by the number of students for whom judgments had been reported. The weighted "socio-economic status" score was used as a measure of the teacher's knowledge of students' socio-economic background.

4. Knowledge of Students (Composite Score). This score represents a composite measurement for each teacher based on scores derived from the Knowledge of Students' Mental Abilities, Knowledge of Students' Interests, and Knowledge of Students' Socio-Economic Status scores. To obtain this composite score, the scores on each of the above scales were standardized and summed.

School-Size Inventory

To secure a measure of school size for comparative purposes, each teacher's principal was asked to provide the number of pupils in average daily attendance in his high school. Because some schools were organized with three grades and some with six, each principal was also asked to specify the number of grades in the high school.

For standardization purposes, the average daily attendance in each school was divided by the number of grades included in the school. This quotient was then used as a measure of school size for each experienced and student teacher.

III. ANALYSIS OF THE DATA

The purpose of this chapter is to present and analyze the data derived from 20 different measurements of 102 experienced teachers and 14 different measurements of 122 student teachers. The code numbers, names of the variables, and code letters are listed below. All 20 variables were assessed for the experienced-teacher sample. Only the first 14 were assessed for the student-teacher sample because portions of the Teacher Attitude Inventory were not appropriate for the student teachers, and their teaching experience was nonexistent.

1. Knowledge of Subject Matter: KSM
2. Social Intelligence: SI
3. Knowledge of Educational Psychology: KEP
4. Achievement Motive: Ach
5. Affiliation Motive: Aff
6. Neutral Score: Neu
7. Professional Attitudes (Short Form): A(SF)
8. Knowledge of Students' Mental Abilities: KSMA
9. Knowledge of Students' Interests: KSI
10. Knowledge of Students' Socio-Economic Status: KSSE
11. Knowledge of Students (Composite Score): K(Comp)
12. Number of Students Judged for Variables 8-11: N
13. Sex of Teacher: Sex
14. Size of School: SS
15. Attitude toward Pupils: APup
16. Attitude toward Administration: AAd
17. Attitude toward Profession: AProf
18. Attitude toward Community: ACom
19. Total Attitude Scale: A(Total)
20. Years of Experience: Exp

Preliminary Examination of the Data

The means and standard deviations for both samples are reported in Table 3. Discussion of these statistics will be made in a later section.

The intercorrelations for all measured variables are reported for experienced and student teachers in Tables 4 and 5. These respective correlation matrixes were prepared primarily as bases for factor-analyzing the data derived from experienced- and student-teacher measurements.

Upon inspection, Table 4 reveals 43 and Table 5 reveals 16 significant correlations. However, in both tables the relationships among Variables 4, 5, and 6 are strongly ipsative in nature, because these three scores result from a forced-choice type of instrument. In Table 4, the relationship of Variable 11 to 8, 9, and 10 and the relationship of Variable 19 to 15, 16, 17, and 18 are of a part-whole correlation nature, thus producing a spurious relationship. Similarly, in Table 5, the relationship of Variables 11 to 8, 9, and 10 is that of

Table 3

Means and Standard Deviations for 102 Experienced Teachers and 122 Student Teachers

Variable	Experienced M	Experienced SD	Student M	Student SD
1. KHM	11.65	5.27	9.84	4.95
2. SI	59.76	24.91	68.55	22.55
3. KEP	33.29	5.57	33.35	5.86
4. Ach	15.17	3.76	14.48	3.25
5. Aff	9.61	2.79	10.04	2.63
6. Neu	5.37	3.13	5.53	3.56
7. A(SP)	110.93	12.56	113.21	10.99
8. KHMA	19.04	3.43	16.43	2.77
9. KHI	5.36	3.93	6.23	4.37
10. KHSE	9.87	4.78	6.92	5.68
11. K(Comp)	49.92	6.52	45.98	7.45
12. N	6.57	2.37	8.43	1.68
13. Sex	0.67	0.47	0.34	0.47
14. SS	143.77	110.69	76.46	72.10
15. APup	33.46	5.23		
16. AAd	32.97	6.93		
17. AProf	40.38	6.43		
18. ACom	55.45	9.14		
19. A(Total)	162.15	9.14		
20. Exp	4.05	2.50		

Table 4

Intercorrelations for Experienced Teachers

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1.	100	26	34	-19	02	21	02	00	-18	07	-06	03	03	-03	-14	-05	-06	03	-07	06
2.	26	100	33	-28	09	25	-07	10	-05	08	05	-16	-26	24	11	-11	-13	04	-04	06
3.	34	33	100	-28	03	29	-07	23	-10	08	10	-10	-21	24	-05	-08	-16	06	-06	12
4.	-19	-28	-28	100	-51	-60	00	-17	07	-06	-08	-02	14	-04	-09	-01	06	-03	-01	-02
5.	02	09	03	-51	100	-27	07	12	04	01	10	09	-07	-13	27	04	08	01	11	-12
6.	21	25	29	-60	-27	100	-11	08	-10	06	01	-12	-07	-15	-15	-07	-19	-06	76	24
7.	02	-07	-07	00	07	-11	100	24	-03	09	15	17	-01	04	38	58	65	70	86	02
8.	00	10	23	-17	12	08	24	100	07	-03	54	09	-11	14	12	15	13	26	25	-06
9.	-18	-05	-10	07	04	-10	-03	07	100	34	73	07	-14	-08	16	-08	-10	01	00	-13
10.	07	08	08	-06	01	06	09	-03	34	100	67	-15	-11	-14	05	-13	04	08	02	16
11.	-06	05	10	-08	10	01	15	54	73	67	100	01	-19	-05	17	-04	04	18	13	-03
12.	03	-16	-10	-02	09	-12	17	09	07	-15	01	100	02	20	16	14	04	16	18	-28
13.	03	-26	-21	14	-07	-07	-01	-11	-14	-11	-19	02	100	-30	-17	-07	08	-24	15	15
14.	-03	24	24	-04	-13	15	04	14	-08	-14	-05	20	-30	100	05	10	-06	12	09	08
15.	-14	11	-05	-09	27	-15	38	12	16	05	17	16	-17	05	100	11	-02	27	43	11
16.	-05	-11	-08	-01	04	-07	58	15	-08	-13	-04	14	-07	10	11	100	34	58	77	03
17.	-06	-13	-16	06	08	-19	65	13	-10	04	04	04	08	-06	-02	34	100	33	61	-11
18.	03	04	06	-03	01	-06	70	26	01	08	18	16	-24	12	27	58	33	100	86	03
19.	-07	-04	-06	-01	-11	76	86	25	00	02	13	18	-15	09	43	77	61	86	100	00
20.	06	06	12	-02	-12	24	02	-06	-13	16	-03	-28	-15	08	11	03	-11	03	00	100

Note: Values to two decimal places; decimal points omitted. N = 102 Arkansas teachers.

Table 5

Intercorrelations for Student Teachers

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1.	100	44	44	-05	09	-02	-01	10	03	-06	-01	-08	-10	01
2.	44	100	35	-12	04	08	-02	09	03	-01	02	-01	-35	09
3.	44	35	100	-03	10	-04	01	08	05	-08	-01	-10	-19	13
4.	-05	-12	-03	100	-33	-69	09	17	16	02	15	05	-03	-04
5.	09	04	10	-33	100	-44	-02	-10	-19	03	-13	-07	12	-09
6.	-02	08	-04	-69	-44	100	-07	-09	00	-03	-03	02	-07	11
7.	-01	-02	01	09	-02	-07	100	-08	10	-06	01	00	-03	03
8.	10	09	08	17	-10	-09	-08	100	11	15	49	-07	-09	-18
9.	03	03	05	16	-19	00	10	11	100	39	75	-18	-20	26
10.	-06	-01	-08	02	03	-03	-06	15	39	100	79	01	-02	14
11.	-01	02	-01	15	-13	-03	01	49	75	79	100	-09	-13	13
12.	-08	-01	-10	05	-07	02	00	-07	-18	01	-09	100	-13	-26
13.	-10	-35	-19	-03	12	-07	-03	-09	-20	02	-13	-13	100	06
14.	01	09	13	-04	-09	11	03	-18	26	14	13	-26	06	100

Note: Values to two decimal places; decimal points omitted. N = 122 Arkansas student teachers.

part-whole correlation. Thus, the number of significant correlations of psychological importance should be considered in the light of these circumstances.

Although the correlation structure for these variables will be discussed in connection with the factor solutions for both experienced and student teachers, it should be noted that correlations in both teacher groups were much lower than anticipated. This may be due to some element of unreliability in the measuring instruments, or it may be due to the multidimensional nature of teacher traits.

Factor Analyses

To determine the structuring of relationships for the traits under consideration, the correlation data for both experienced and student teachers were factor-analyzed. Although there are many existing factor models, the investigator concluded that the normal varimax solution developed by Kaiser (1958) would provide the best procedure for these data. This decision was based on the normal varimax tendency toward invariancy regardless of inclusion or exclusion of variables within a domain. Furthermore, the normal varimax solution seems to produce "good" orthogonal simple structure.

The number of factors deemed sufficient or appropriate to account for each correlation matrix was determined by first obtaining a Hotelling principal axis solution, using unity as the communality estimate (Kaiser, 1960) for each variable. All principal components, whose latent roots were greater than unity, were then rotated to the normal varimax solution. The factor solutions for experienced teachers are reported in Table 6 and for student teachers in Table 7.

Experienced-Teacher Factor Solution

Table 6 reveals that seven factors seem to adequately describe the 20 experienced-teacher variables. Using a minimum factor loading of .30 as an arbitrary criterion, Factor I is best defined by Variables 1, 2, and 3--Knowledge of Subject Matter, Social Intelligence, and Knowledge of Educational Psychology, respectively. It was expected that the Achievement Motive might load on this factor. However, this did not occur. Furthermore, it was surprising to find that the low loading of this variable was negative. Further exploration of this motive and its relation to the three foregoing variables seems in order.

Factor II is defined by Variables 4 and 6--Achievement Motive and Neutral Score, respectively. The bipolarity of this factor results from the ipsative characteristics inherent in the scoring of these variables. The Neutral Score may be considered as a "dummy" variable used in assessing achievement and affiliation motives. The negative loading for Variable 8, Knowledge of Students' Mental Abilities, offers some difficulty of interpretation. It may be that teachers who are motivated to achieve, perhaps being somewhat self-centered, are less likely to concern themselves with acquiring knowledge of their students.

Table 6

Varimax Factor Solution For
102 Experienced Teachers

Variables	Factors							
	I	II	III	IV	V	VI	VII	h^2
1. KSM	82	-04	-05	02	-01	-09	-17	71
2. SI	59	-10	20	-08	13	02	37	56
3. KSP	65	-27	00	-04	00	07	27	59
4. Ach	-20	78	-51	01	00	01	10	92
5. Aff	07	-08	88	02	-18	03	-14	84
6. Neu	15	-83	-22	-10	25	-03	11	85
7. A(SP)	00	-04	09	91	-02	07	-04	84
8. KSMA	07	-40	-02	28	-37	38	16	55
9. KSI	-21	12	06	-11	-11	79	09	72
10. KSSE	20	05	01	03	36	73	-14	72
11. K(Comp)	02	-11	03	11	-08	98	05	98
12. N	-09	04	06	14	-68	-04	17	53
13. Sex	-12	-02	-16	-07	-14	-18	-67	54
14. SS	09	-12	-20	07	-20	-14	74	67
15. APup	-15	16	59	28	09	14	36	62
16. AAd	-14	-06	-02	77	-04	-15	08	65
17. AProf	-02	07	-03	68	-08	00	-35	60
18. ACom	08	03	03	83	-01	10	22	75
19. A(Total)	-06	06	15	97	-04	04	11	98
20. Exp	-02	-13	-05	06	76	-04	23	65

Note: Factor loadings to two places; decimal points omitted.

Table 7

Varimax Factor Solution For
122 Student Teachers

Variables	Factors							
	I	II	III	IV	V	VI	VII	h^2
1. KEM	69	-02	17	10	12	-06	-15	56
2. SI	76	-12	-01	-06	04	01	06	61
3. KEP	67	04	12	11	07	-08	-22	54
4. Ach	-11	90	-25	03	11	03	04	90
5. Aff	18	07	83	01	-11	04	-01	74
6. Neu	-02	-90	-40	-03	-03	-04	-02	98
7. A(SP)	04	05	-03	86	-10	02	09	77
8. KSMA	09	07	-08	-05	96	14	01	97
9. KSI	12	14	-45	25	-02	68	-32	87
10. KSSE	-07	-06	17	-14	05	92	08	92
11. K(Comp)	02	06	-18	05	36	90	-09	99
12. N	-05	00	-06	03	-11	00	80	65
13. Sex	-56	-07	45	08	04	-09	-36	67
14. SS	11	-05	-15	-13	-33	21	-60	56

Note: Factor loadings to two places; decimal points omitted.

Factor III is best defined by Variables 5, 15, and 4--Affiliation Motive, Attitude toward Pupils, and Achievement Motive. The best definer of this factor is Affiliation Motive. The negative loading for the Achievement Motive variable again results from the ipsative characteristics inherent in measuring these two motives. It seems quite consistent that teachers' attitude toward pupils should load on this factor because favorable attitudes toward others implies an affiliative characteristic.

Factor IV is defined by Variables 19, 7, 18, 16, and 17--Total Attitude Scale, Professional Attitudes (Short Form), Attitude toward Community, Attitude toward Administration, and Attitude toward Profession, the last three being subscales of the Total Attitude Scale. Although the multidimensional attitude scale was developed to measure the independent aspects of professional attitudes, the evidence suggests that attitudes toward the referents of these scales are not independent. It should be noted, however, that Attitude toward Pupils, also part of this instrument, did not load substantially on this factor. It would seem, therefore, that of the four attitude referents only the Attitude toward Pupils is relatively independent of other professional attitudes.

Factor V is defined by Variables 20, 12, 8, and 10--Years of Experience, Number of Students Judged, Knowledge of Students' Mental Abilities, and Knowledge of Students' Socio-Economic Status. The dominant variables on this factor are Years of Experience and Number of Students Judged. This latter variable, however, is merely an attendant variable used for scoring the knowledge-of-students variables and has no significance beyond this study. The negative loading of Variable 8 suggests that Years of Experience and Knowledge of Students' Mental Abilities are inversely related. The positive loading of Variable 10 points to a direct relationship between Years of Experience and Knowledge of Students' Socio-Economic Status.

Factor VI is best defined by Variables 11, 9, 10, and 8--Knowledge of Students (Composite Score), Knowledge of Students' Interests, Knowledge of Students' Socio-Economic Status, and Knowledge of Students' Mental Abilities. It may, therefore, be designated a Knowledge of Students factor. The high loadings for Variables 9 and 10 on this factor suggest that they have considerable communality. The lesser loading of Variable 8 suggests that, although a Knowledge of Students' Mental Abilities does have a positive relationship with Variables 9 and 10, it still has a marked degree of independence.

Factor VII is defined by Variables 14, 13, 2, 15, and 17-- Size of School, Sex of Teacher, Social Intelligence, Attitude toward Pupils, and Attitude toward Profession. The dominant variable is school size. The large negative loading of Variable 13 indicates that the proportion of men teachers is inversely related to size of school. This is somewhat surprising but may be due to sampling. The magnitude of Variables 2 and 15 indicates that, although social intelligence and attitude toward pupils are somewhat independent of this factor, they do have a positive relationship with size of school. This is in the anticipated direction. The negative loading of Variable 17 is somewhat puzzling. Why should school size and attitude toward the profession manifest an inverse relationship? This might well bear investigation.

In summation, the above analysis reveals that the experienced-teacher domain may be characterized by seven factors: professional development, achievement motivation, affiliation motivation, professional attitudes, years of experience, knowledge of students, and school size. There is some indication that social intelligence and knowledge of educational psychology have a more limited relationship to a professional-development characteristic than knowledge of subject matter. Factor loadings for achievement and affiliation indicate an inverse relationship which might be expected from the bipolarity inherent in their assessment in this study. However, the inverse relationship between the achievement motive and knowledge of students' mental abilities and attitude toward pupils was not anticipated and may indicate further study. The inverse relationship between school size and attitude toward the teaching profession may also warrent further study.

Student-Teacher Factor Solution

Table 7 reveals that seven factors best describe the 14 student-teacher variables. Using a minimum factor loading of .30 as an arbitrary criterion, Factor I is best defined by Variables 2, 1, 3, and 13--Social Intelligence, Knowledge of Subject Matter, Knowledge of Educational Psychology, and Sex of Teacher, respectively. A possible designation for this factor might be Professional Development. Differing from experienced teachers, the strong negative loading of Variable 13 may be an outcome of a higher proportion of women in this sample. The direction of the loading, however, is the same for both teacher groups. Further exploration of this relationship may be in order. As with experienced teachers, the achievement-motive variable for student teachers did not load on this factor.

Factor II is best defined by Variables 4 and 6--Achievement Motive and Neutral Score. An appropriate designation for this factor would be Achievement Motive. The bipolarity of this factor results from the ipsative characteristics in the derivation of the variables. As was pointed out previously, the Neutral Score may be considered as merely a "dummy" variable acquired in the assessment of the Achievement-Affiliation motives.

Factor III is defined by Variables 5, 9, 13, and 6--Affiliation Motive, Knowledge of Students' Interests, Sex of Teacher, and Neutral Score. As Variable 5 dominates this factor, it may be termed an Affiliation Motive factor. The strong negative loading of Variable 9 suggests that the more affiliatively motivated student teacher is likely to possess less knowledge of his students' interests. This is contrary to expectations inasmuch as a teacher so motivated might be expected to seek a closer personal relationship with his students and thus obtain greater knowledge of their interests. Further, the positive loading of Variable 13 suggests that men are more likely, at least for this sample, to be affiliatively motivated than women. This relationship is also somewhat surprising, and may need additional investigation.

Factor IV is best defined by Variable 7, and may be considered a Professional Attitudes factor. For the student-teacher sample, this factor is largely specific and consistent with the corresponding factor for the experienced-teacher group.

Factor V is defined by Variables 8, 11, and 14--Knowledge of Students' Mental Abilities, Knowledge of Students (Composite Score), and Size of School. As Variable 8 is the dominating variable, this factor may be termed Knowledge of Students' Mental Abilities factor. The positive loading of Variable 11 is due to a part-whole relationship and has little psychological significance. However, the negative loading of Variable 14 suggests that an inverse relationship exists between size of school and knowledge of students' mental abilities. This is probably to be expected inasmuch as intimate knowledge of students would seem to be decreasingly possible as the number of students involved in a teaching situation increases.

Factor VI is defined by Variables 10, 11, and 9--Knowledge of Students' Socio-Economic Status, Knowledge of Students (Composite Score), and Knowledge of Students' Interests. It may be denoted as a Knowledge of Students' Personal Life factor. This is an independent factor as variables other than the three defining ones provide no significant loadings. The close relationship between Variables 10 and 9 is to be expected; the loading of Variable 10 is due to a part-whole relationship and is not psychologically significant. However, the lack of relationship between a knowledge of students' personal lives and the teacher's knowledge of the students' mental abilities is surprising.

Factor VII is defined by Variables 12, 14, 13, and 9--Number of Students Judged for Variables 8-11, Size of School, Sex of Teacher, and Knowledge of Students' Interests. Variable 12 dominates this factor, which may in consequence be termed a Number of Students factor. As Variable 12 is somewhat extraneous to the study, this factor is of little psychological significance. However, the strong negative loadings of Variables 14, 13, and 9 may suggest that a knowledge of students' interests and school size may be inversely related. Further, women teachers may be more inclined to make judgments on students than are men.

In summation, the 14 variables of the student-teacher sample may be described by 7 factors. Knowledge of subject matter, social intelligence, and knowledge of educational psychology unite to form one factor, while achievement motivation and professional attitudes manifest specific and independent characteristics within this set of variables. Affiliation motivation and knowledge of students' interests are negatively related on one factor, while knowledge of students' interests and knowledge of students' socio-economic status define a factor that is independent of knowledge of students' mental abilities.

Of the key teacher traits measured, all are of complexity one, with the exception of knowledge of students' interests.

Comparison of the Factor Solutions

A major purpose of this study was to determine if the factor structures of the traits of experienced and prospective teachers are similar. An attempt was made to place the same factors of each study in the same ordinal position in an earlier part of the study. The positions of the factors in each table are arbitrary and in no way influence the data or conclusions.

As stated previously, seven descriptive factors have been found for both groups. An examination of these factor solutions reveals that five experienced- and student-teacher factors are highly related. They are: Factor I, Professional Development; Factor II, Achievement Motive; Factor III, Affiliation Motive; Factor IV, Professional Attitudes; and Factor VI, Knowledge of Student Personal Life. It may be presumed, therefore, that these facets of the teacher-trait domain are highly persistent and may well serve as a basis of further study.

Factor V for experienced teachers corresponds to Factor VII for student teachers. The common variable to the two groups is Number of Students Judged. This variable is of secondary consequence in this study and, other than representing part of the data, is of little concern in interpretation.

Factor V for the student teachers is defined by the Knowledge of Students' Mental Abilities variable. This variable turns out to have high complexity for the experienced teachers and consequently does not exist as a factor for this group.

Factor VII for experienced teachers bears no clear-cut relationship to any factor of the student group. Its definers are on variables included only as marginal variables and accordingly are not pertinent to the main purpose of this study.

In general, there seems to be remarkable similarity in the two correlational complexes. For the important variables of this study, Knowledge of Students' Mental Abilities seemed to be the variable least stable between the two factor structures.

Examination for Simplexes

Guttman (1954) has pointed out that sets of variables may have an inherent ordering in terms of "complexity." One of the possible orderings of variables is defined in the following way: Variables x y, and z will be simplex-ordered if $r_{xz \cdot y}=0$. Usually simplexes, if they exist at all in a set of variables, will be found among variables measuring the same general content.

The variables of this study did not constitute measurements of traits in the same general area, but it was decided to examine the relationships for simplex structures for any hidden clues which might throw further light upon the teaching-complex domain. For both correlation matrixes, all first-order partial correlation coefficients were obtained. Using the vanishing or near-vanishing partials, an attempt was made to identify simplexes or quasi-simplexes among the variables. Many three--and a few four--variable simplexes were found; but this approach was abandoned because it was felt that small simplexes would not disclose much information about the structure of interrelationships for these data.

Comparison of Experienced and Student Teachers

Means and the differences between the means were computed for experienced and student teachers on Variables 1-12 and are reported in Table 8. The differences for Variables 3, 4, 5, 6, 7, and 9 were insignificant. The differences were significant at the 1 per cent level for Variables 1 and 2; and for Variables 8, 10, 11, and 12, the differences were significant at the 0.1 per cent level.

A closer inspection of these differences reveals that experienced teachers score more highly on knowledge-of-subject-matter tests than do student teachers. This difference is in the expected direction, inasmuch as experienced teachers by necessity have had a more thorough and continuing review of subject-matter facts and principles.

A highly significant difference was found on social intelligence in favor of student teachers. As experienced teachers presumably would have acquired greater social insights and judgments than would have student teachers, this finding was contrary to expectations. The higher scores may be due, however, to social-development experiences in a university program, the emphasis on social factors in the teacher-education curricula, and to the disproportionate sex factor between the two groups.

In regard to the latter surmise, it should be noted that social intelligence correlates significantly with sex (.26 for experienced teachers and .35 for student teachers) in favor of women. This being true, the much greater proportion of student women teachers, as compared with experienced women teachers, in the two samples under consideration may have resulted in a higher mean score for student teachers.

Among the differences which are very highly significant, Variable 8, Knowledge of Students' Mental Abilities, will be considered first. That experienced teachers should have a higher mean score than student teachers on this variable is to be expected. Experienced teachers have more contact with their students than do student teachers and conceivably are thus able to make more accurate judgments. They may also have a greater conscious need for making such judgments in order to teach effectively.

A similar very highly significant difference is found for Variable 10, Knowledge of Students' Socio-Economic Status. This

Table 8

Comparison of Teacher Groups on Twelve Variables

ET - 102 Experienced Teachers   ST - 122 Student Teachers

Variables	Means (ET)	Means (ST)	Mean Diff.	S.E. Diff.	t-value
1. KSM	11.65	9.84	1.81	.69	2.63[a]
2. SI	59.76	68.55	-8.79	3.20	2.74[a]
3. KEP	33.29	33.35	-0.06	.71	.08
4. Ach	15.17	14.48	0.69	.47	1.46
5. Aff	9.61	10.04	-0.43	.36	1.18
6. Neu	5.37	5.53	-0.16	.45	.36
7. A(SF)	110.93	113.21	-2.28	1.61	1.41
8. KSMA	19.04	16.43	2.61	.42	6.17[b]
9. KSI	5.36	6.23	-0.87	.56	1.57
10. KSSE	9.87	6.92	2.95	.70	4.23[b]
11. K(Comp)	49.92	45.98	3.94	.93	4.22[b]
12. N	6.57	8.43	-1.86	.28	6.64[b]

a Significant at the 1 per cent level.
b Significant at the 0.1 per cent level.

difference is also in the expected direction. Experienced teachers have had more occasion than student teachers to work with the parents of their students. Assuming this to be a desirable and useful trait, experience is apparently a contributing factor in acquiring such knowledge.

Since experienced teachers scored more highly on Variables 8 and 10, Knowledge of Students' Mental Abilities and Knowledge of Students' Socio-Economic Status, it is to be expected that they would score similarly on Variable 11, Knowledge of Students (Composite Score). The difference between the means is in the expected direction.

It was expected that experienced teachers would know more students and know more about them than would student teachers. The data substantiated this expectation.

Comparison of Teachers by Teaching Specialty

To determine if experienced and student teachers differed for subject specialties (English, social studies, science, and mathematics), analyses of variance were computed for 10 variables which seemed particularly relevant to the teacher-trait domain. To simplify computations for this phase of the study, 14 individuals were randomly selected for each subject-specialty area from each of the two groups of 102 experienced and 122 student teachers. The means of teaching specialty scores for all 10 variables are reported for both teacher groups in Table 9. The means squares for teacher groups, subject-specialty areas, interaction, and error are reported in Table 10.

An examination of these data reveals significant differences between experienced and student teachers for five of the selected variables. These differences involve Social Intelligence, Professional Attitudes, Knowledge of Students' Mental Abilities, Knowledge of Students' Socio-Economic Status, and Knowledge of Students (Composite Score). As might be expected, for all variables except Knowledge of Subject Matter and Professional Attitudes, the results are comparable to the results reported in Table 8. The finding of a difference for Professional Attitudes in this analysis not found for the total samples and a failure to find a difference for Knowledge of Subject Matter in this analysis found for the total samples may be due to sampling.

However, the primary purpose of this phase of the study was to determine the possible existence of differences between subject specialties for experienced and student teachers. It might be supposed that the teaching demands of a specific subject area would eventuate in a specific teacher-trait complex. Contrary to expectations, no significant differences have been found. It would seem, therefore, that future efforts to determine teaching effectiveness may well be concerned almost entirely with the degree to which existent teacher traits are relevant to teaching success. This being the case, the subject-specialty factor need receive only minimum attention.

Table 9

Means of Subsamples on Ten Selected Variables

ET - 56 Experienced Teachers ST - 56 Student Teachers

Variable	Group	Subject Area				
		Science	Mathematics	Social Studies	English	All Subjects
1. KSM	ET	12.64	10.57	9.64	10.00	10.74
	ST	7.50	10.14	8.79	10.14	9.14
2. SI	ET	59.64	58.93	54.29	68.57	60.36
	ST	56.43	70.93	72.00	78.14	69.38
3. KEP	ET	32.94	34.36	32.21	35.43	33.43
	ST	33.00	32.50	32.50	35.21	33.30
4. Ach	ET	14.86	15.07	17.00	15.14	15.52
	ST	13.71	14.64	15.00	13.50	14.21
5. Aff	ET	10.07	8.29	9.00	9.50	9.21
	ST	10.57	9.71	10.64	10.00	10.23
7. A(SF)	ET	108.36	108.50	107.07	109.00	108.23
	ST	119.79	111.00	111.21	115.93	114.48
8. KSMA	ET	13.71	19.36	20.29	19.36	19.43
	ST	15.00	16.93	15.57	17.57	16.27
9. KSI	ET	3.71	4.86	4.21	7.64	5.11
	ST	4.57	5.57	5.71	5.71	5.39
10. KSSE	ET	9.07	10.57	9.43	9.14	9.55
	ST	6.07	6.21	5.50	7.36	6.29
11. K(Comp)	ET	47.64	50.29	47.79	51.64	49.83
	ST	42.86	45.50	43.79	46.79	44.73

Note: The above values are based on 2 groups of 56 teachers each, with 14 individuals from each subject specialty area, randomly selected from total samples of 102 experienced teachers and 122 student teachers. Variable 6 omitted from above table.

Table 10

Analyses of Variance Mean Squares for Ten Selected Variables

Variable	Teacher Groups df, 1	Subject Areas df, 3	Interaction df, 3	Error df, 104
1. KSM	69.14	6.86	40.86	27.86
2. SI	2,227.01[a]	1,136.10	547.06	558.18
3. KEP	2.01	49.91	8.87	296.09
4. Ach	7.72	17.91	3.25	11.38
5. Aff	29.01	8.32	2.56	8.39
7. A(SF)	1,093.75[b]	150.07	106.82	129.30
8. KSMA	279.72[b]	13.58	12.01	8.21
9. KSI	2.29	31.26	16.07	15.83
10. KSSE	229.01[b]	6.18	9.08	26.34
11. K(Comp)	730.32[b]	79.17	2.49	41.00

Note: Data based on 2 teacher groups of 14 individuals from each of 4 subject-specialty areas, randomly selected from total samples of 102 experienced and 122 student teachers. Variable 6 omitted from above table.

[a] Significant at the 5 per cent level.
[b] Significant at the 1 per cent level.

Conclusions

1. Clearly defined psychological factors can be derived from the trait-complex of experienced and student teachers. These factors are similar for both groups and are broadly related to those found in other studies of human development. Being multiple, they tend to reinforce the multidimensional, as contrasted with the unitary theory of teacher personality.

2. Being clearly defined, these teacher-trait factors may possibly be used to identify the effective teacher when compared with an accepted "effectiveness" criterion. Inasmuch as these factors seem to support the multidimensional concept of teacher personality, a level of minimal, and perhaps maximal, scores would need to be established in relation to this criterion for the respective trait measurements.

3. The great similarity between teacher groups for five of the derived factors suggests that they are relatively stable and persistent from the inexperienced to experienced stages of teacher development. This being the case, it is possible that they may be used for predicting potentially successful teacher candidates when measured against an effective experienced-teacher criterion.

4. Assuming social intelligence to be an important teacher trait, its tendency to diminish with experience needs to be explored. This tendency may be due to certain unidentified influences of the teaching situation. On the other hand, it may be due to current training programs implementing the development of social insights of student teachers. However, it may be due simply to the disproportionate sampling of men and women in the two teacher groups.

5. No significant differences were found for any of the selected variables when the teachers were classified according to their teaching specialty. This suggests that, although the teaching personality may be multidimensional as indicated by the factor solutions, the structure of traits found in this study does not vary from one teaching field to another.

6. The factor analysis shows that certain characteristics designated by different terms in reality are identical. For example, knowledge of subject matter, social intelligence, and knowledge of educational psychology appear to be but phases of a professional-development trait. Attitude toward pupils, toward administration, toward the profession, and toward community are but phases of an attitude trait. Likewise knowledge of students' interests and knowledge of students' socio-economic status are but phases of a knowledge of the personal-life traits of the students.

7. Future studies should analyze the composition of various criteria of teaching effectiveness, such as principals' ratings, peer ratings, pupil ratings, self-ratings, and pupil gains in terms of the factors found in this study. In all likelihood teaching effectiveness is a complex of the interaction of situational factors and

the many personal traits of teachers and pupils. The analysis of this complex in terms of the stable factors found in this study should help us to define better what is meant by Teaching Effectiveness.

Of the teacher traits that are found to predict teaching effectiveness, particular attention should be given to those that can be modified through education as a basis for the professional training of teachers and to those that are impervious to change as a basis for selective guidance. To determine the modifiability or the imperviousness of these traits, measures of estimation can be secured in several ways. Knowledge of Subject Matter scores for the student-teacher sample could be compared with their sophomore grade point average, and Knowledge of Educational Psychology scores for the student-teacher sample could be compared with their course marks in educational psychology. Further, a longitudinal study could be conducted in which students in the colleges of education could be tested as sophomores and again as seniors for social intelligence, achievement motivation, affiliation motivation, and professional attitudes. These estimations would enable guidance counselors to make at least general predictions of teaching effectiveness even at the sophomore level.

IV. MEASUREMENT OF ACHIEVEMENT AND AFFILIATION MOTIVES

Introduction

The purpose of this aspect of the study was to determine the feasibility of measuring the achievement and affiliation motives of experienced secondary school teachers with a structured self-response instrument. Three objectives could be accomplished through an investigation of this nature. First, if the approach to the assessment of these two motives could be satisfactorily demonstrated, its use would not be limited to these motives or to the field of education. Second, since the achievement and affiliation motives are perceived as possible components in the teacher complex, an adequate scale might prove useful in teacher selection, education, and placement. Third, the more successful efforts directed toward the assessment of motives to date have for the most part involved methods which were quite complex in nature and usable only by individuals specialized in this area. If the phenomenon of motivation is to be utilized adequately, a method of assessment usable by persons not so highly specialized in the field of educational and psychological measurement must be developed.

A second aspect of this part of the study, assuming that the two motives can be measured, would be to determine if teachers are more achievement or more affiliation motivated.

The achievement and affiliation motives were defined for this investigation in terms which could be used as a guide in instrument construction and which would be consistent with this approach to their assessment. The affiliation motive was defined as "A desire to establish, maintain, restore, or enhance positive personal relationships based on the inherent value of the human personality" (McClelland, Atkinson, Clark, & Roby, 1949). The achievement motive was defined as "A goal-oriented desire to become involved in and successful with tasks which are perceived by the individual as success characteristics" (Atkinson, 1958, pp. 110-111).

Background

General

Slightly more than 10 years ago, McClelland et al. (1949) studied the achievement motive by using a projective technique. Their study was derived from findings of a previous investigation of the hunger drive (McClelland & Atkinson, 1948). On the basis of detectable shifts in hunger manifestations found in the responses, the same question was investigated with reference to the achievement motive. Stories written by 200 male college students in response to four pictures portraying achievement situations were analyzed. The stories were written under varying orientations: relaxed, neutral, failure, and success-failure. An adaptation of Murray's method of analysis was used for scoring. The scores were based on allusions to achievement imagery, stated need for achievement, description of instrumental activity directed toward achievement, anticipatory goal states, defined obstacles or blocks, nurturant press, certain affective states, and general themes of achievement. The results reported indicated that the scores were influenced by the varying orientations, and the scores did reflect a significant increase in achievement imagery. In later writings this approach was referred to as "content analysis" (McClelland, 1951). This is not to be confused with the "content analysis" scheme developed by Dollard and Auld (1959) for use in psychoanalytic interviews.

Shipley and Veroff (1952) undertook the task of investigating the possibility of developing a similar method for measuring the affiliation motive. The task involved two studies. The first was a comparison of the results of two groups of students who had responded to affiliatively cued pictures, with one group having been experimentally aroused in terms of affiliation. The second group served as a control group. The second study was essentially of the same design but with some difference in the source of arousal. A comparison of the responses of the two groups was made to develop scoring categories applicable to the affiliation motive. The resulting scoring design was quite similar to the one developed by McClelland for use with the achievement motive. Shipley and Veroff found that the frequency of imaginative stories involving concern over separation from another person did increase. Atkinson, Heyns, and Veroff (1954) studied the possibility of extending the affiliation motive to a more generalized concept. The meaning was extended to include any concern over establishing or maintaining a positive, affective relationship with others. As in the previous studies described, arousal of an affiliative nature was compared with a control condition of no arousal. The subjects were 31 fraternity members at the University of Michigan. The conclusion was that sufficient evidence existed to warrant the extension of meaning for the affiliation concept.

Experimentation with a Verbal Stimulus

Approaching the problem of motive assessment through a slightly different stimulus, French (1956a; 1956b) utilized a "projective technique" of motive assessment in the development of the Test of Insight. Her scale was developed as part of a personnel selection program for the United States Air Force. Utilizing the type of stimulus developed by Sherriffs (1948) for the assessment of attitudes--that is, verbal statements describing a situation, action, or feeling--French developed stems which evoked either affiliation or achievement responses or both. Sample items from Form I are: (a) Bill always lets the "other fellow" win; (b) Fred enjoys organizing groups and committees; (c) Don is always trying something new. The subjects, Air Force trainees, responded to the stems in a free-response manner, and the results were analyzed according to a scoring scheme quite similar to the one developed by McClelland. French added a "failure" category. Considerable emphasis was placed on failure as a natural continuum with success. Two forms of the test were developed.

Using the scale in a subsequent study of the hypothesis that motivation under particular environmental conditions is a function of the typical motivation level of the individual as well as environmental cues, French (1955) examined 90 male students in the Officer Candidate School at Lackland Air Force Base. The subjects were tested in two sessions with a five-month interval. The first session also included a digit-letter substitution test to determine typical performance level. No arousal instructions were given during the first administration. Three groups were determined from the motive scores from the first administration. Each group contained 15 high- and 15 low-scoring subjects. Verbal instructions designed to vary achievement level were introduced for the second administration. Group One was designated as the relaxed group, Group Two was designated as the task-motivated group, and Group Three was given extrinsically motivating instructions immediately preceding the administration of the test. Results from the administration of Form II were then compared with the results from the first administration of Form I. French's conclusions were:

1. Increase in achievement motivation scores was a function of both previous motivational level and the experimental conditions.
2. Performance scores were more closely related to motivation scores than to the experimental conditions.
3. Performance scores in one situation tended to be most closely related to motivation scores in another when the situation presented similar motivational cues.
4. When affiliation cues were more prominent in the situation than achievement cues, performance was related to affiliation motivation scores rather than achievement motivation scores.

The Effects of Free-Response

The investigator and his associates have voiced reservations concerning the utilization of free-response items in the area of motive assessment. The contention was that reliability in an instrument of this nature could be accounted for through the effects of verbal fluency. In an attempt to investigate the effects of verbal fluency in terms of its influence on achievement- and affiliation-motive scores, the effects of verbal fluency on test-retest and alternate-form reliability for French's Test of Insight were partialled out (Van Zandt & Himelstein, 1961). The number of words written in response to the 10 stems used in the Test of Insight was used as an index of the individual's verbal productivity. Their conclusion was that verbal productivity did not account for the reliable variance in the instrument.

Structured Measures of Motivation

The Personal Preference Schedule (PPS) developed by Edwards (1954; 1957) contains items for the measurement of the achievement and affiliation "personality traits." His scale consists of items covering 15 personality traits in which self-rating statements are presented. Items are presented as paired-force choice. A split-half reliability coefficient is reported for 1,509 cases. Achievement is reported as having a reliability coefficient of .74, and affiliation is reported as .70. For test-retest correlation coefficient, .74 is reported for achievement and .77 for affiliation (N=89). Only one significant descriptive relationship is reported. The correlation coefficient between the "agreeableness" score of the Guilford-Martin Personnel Inventory and the affiliation trait is .24 (P less than .05). Agreeableness, as used in the inventory, is denoted as an opposition to a domineering disposition, belligerent attitude, and conflicts stemming from minor provocations.

The PPS was later utilized by Merrill (1960) to compare the need structure of several teacher groups. One group consisted of 781 college students enrolled in an education orientation course. Another group involved 53 experienced male science teachers enrolled in an institute during the regular academic year. The average teaching experience for this group was 7 years, and the average age was 34 years. A third group was made up of 32 school administrators who were attending an in-service training program. The average experience level was 10 years, and the average age was 38.4 years. A norm group of 760 male college students also responded to the PPS. Merrill's conclusions were that such needs as high deference, order and endurance, and low heterosexuality and exhibition were more characteristic of successful teachers and administrators. He felt that the departure from this pattern by education students partly explains the failure of many beginning teachers to remain in teaching. The means and standard deviations for the achievement and affiliation scores of the experienced-teacher group are reported here for later reference. The mean for the achievement scores was 16.77 with a standard deviation of 4.04. The mean and standard deviation for the affiliation scores were 15.62 and 4.23 respectively. These means and standard deviations did not differ significantly and did not differ significantly from those of the norm group.

Construction of the Motivation Scales

As a result of findings in investigations to date, it was felt that an adequate scale for the assessment of the achievement and affiliation motives possessed by experienced secondary school teachers could be developed through use of a type of projective technique with a forced-choice system of responses.

It was maintained by the investigator that the pattern of needs of each individual would be a direct function of the stability of the situation in which assessment is made. Therefore, since the scale was to be designed for use with secondary school teachers, the scale items should be centered around the school setting.

Development of the Items

An initial pool of 30 items was prepared. The items were based on situations and problems representative of the public secondary school situation. Considerable attention was given each item in terms of application for various sizes of secondary schools, differences in curriculum and co-curriculum emphasis, and levels and diversity of teachers' academic preparation and experience.

Six explanatory responses were prepared for the initial 30 stems. Each response provided an alternative way for explaining the problem or situation. Two responses for each stem were made for each of the three motive references: achievement, affiliation, and neutral. It was believed that the neutral response would function by providing an alternative for those individuals having achievement and affiliation motives subordinate to other undefined motives.

The first task was to provide as much item refinement as possible before combining the items into a final format for statistical analysis. The items were submitted to seven members of the Department of Psychology at the University of Arkansas for _a priori_ judgments concerning item adequacy in meeting certain criteria.

The responses to each stem were distributed on an inspection basis; that is, the achievement, affiliation, and neutral responses were arranged for each stem so that no consistent response pattern was used. Each member was asked to judge the acceptability of the stems in terms of the criteria provided and the classification of the response in terms of the definitions for achievement, affiliation, and neutral indexes. The following information and instructions were presented to the seven judges.

The statements and responses have been constructed with these intentions:
The _stems_ are either neutral in nature or are equally cued for affiliation and achievement motives.

The _responses_ are cued specifically for the achievement motive, the affiliation motive, or a neutral status.

Each stem, based on a hypothetical school situation, has six alternative explanatory responses which provide a plausible explanation for the action or situation involved. The intent for your judgment is quality and equality. The definitions and criteria to be used for judgments in this case are:

1. Affiliation Motive--A desire to establish, maintain, restore, or enhance positive personal relationships based on the inherent value of the human personality. Criteria for determining presence of an affiliation motive:
   a. Affiliation Imagery--Reference to positive friendly relationships between individuals or groups of individuals.
   b. Stated Need for Affiliation --Desire on the part of the individual for affiliation with respect to himself or others.
   c. Instrumental Activity Involving Affiliative States--Reference to situations involving positive affiliative characteristics.
   d. Positive Affective States of Affiliation--References to emotions depicting satisfaction with a state or affiliation.

2. Achievement Motive--A goal-oriented desire to become involved in and successful with tasks which are perceived by the individual as success characteristics. Criteria for determining presence of an achievement motive:

   a. Achievement Imagery--Evidenced by reference to competition with a standard of excellence and unique accomplishment or long-term involvement directed toward an achievement goal.

   b. Stated Need for Achievement--Desire on the part of the individual for successful achievement with respect to himself or others.

   c. Instrumental Activity Involving Achievement--Reference to overt or covert activity concerned with achievement.

   d. Anticipation of Desirable Achievement States--Reference to anticipated attainment of a desirable achievement-oriented goal.

   e. Positive Affective States of Achievement--References to emotions depicting satisfaction with progress toward or attainment of an achievement goal.

3. Neutral Status--In addition to being neither achievement nor affiliatively cued, the neutral response should not contain cues which would permit other motives to operate; however, generality or ambiguity should not be used to the extent that the response is meaningless.

Twenty-five items were considered to be a minimum number for a scale of this nature. If there were disagreements among the judges to the extent that 25 items were not available, revision of the items and a second judgment were planned. Five of the seven judges had to agree in classifying the responses by the above criteria. There was a total of 180 responses for the 30 stems. Complete agreement among the judges was found for 93 responses. A disagreement of more than one judge was found for 12 responses. The judges disagreed considerably on two items. (These two items were brought to an acceptable level with minor revisions.) None of the stems were designated as unsatisfactory by more than one of the judges; however, some of the judges suggested slight revisions which were incorporated.

Two parallel forms were prepared for administration to experienced teachers in the public secondary schools of the State of Missouri. Both forms used the same stems, but a separate triad of responses consisting of a neutral, achievement, and affiliation-motive response was used with each stem in each form. The instructions for marking the items were in the form of a cover sheet and emphasized that none of the responses were either right or wrong and that each item should be considered only in terms of what the teacher felt, as a result of his experience, to be the most adequate explanation. The teacher was directed to select two of the three possible responses for each stem: one was to be selected as the most adequate, and one was to be selected as the least adequate.

For the purpose of item analysis, 157 secondary teachers in schools of varying sizes of enrollment in the State of Missouri were used. Size of school was considered with references to the item-analysis sample but was not considered in the final scale administration. No restriction in instructional areas was imposed for the item-analysis sample. One hundred and sixty-five teachers in 10 public secondary schools of various sizes of enrollments responded to the items on a self-administered basis. Eight were eliminated for failure in following the recommended marking scheme. The enrollments ranged from 150 to slightly over 2,000 for the 10 schools involved. The range in number of years' teaching experience was 41 years. The mean number of years' teaching experience was 15.33 with a standard deviation of 12.10. All instructional areas were represented.

Scoring Methods

Initially two scoring schemes were proposed for use with the items; however, both were based on the number of agreements with the response classification. One proposal suggested use of the neutral score as an adjustment by subtracting it from both the achievement and the affiliation scores. This would allow both the achievement-motive score and the affiliation-motive score to have a common reference point for comparison purposes. Two scores, the achievement-motive score and the affiliation-motive score, would result from this method of scoring. These scores will be referred to as the adjusted-motive scores. A second proposal suggested giving the response selected by the teacher as the most appropriate response a value of two and the response selected as the least appropriate response a value of zero. The response not selected would be given a value of one, since it would represent a position between the most and least values. This method of scoring would yield three scores: achievement, affiliation, and neutral. These scores will be referred to as the unadjusted scores.

An indication of the consistency of relationships among the unadjusted scores for two different samples can be seen when the correlations reported in Tables 11 and 12 are compared. The correlation between the achievement and affiliation scores for the sample of teachers taken from the Missouri schools was -.23. The corresponding relationship in the Arkansas sample was -.06. The achievement-neutral score relationship was -.77 for the Missouri sample and -.75 for the Arkansas sample. The affiliation-neutral score correlations were -.45 and -.56.

An intercorrelation matrix of the motive scores derived from the two scoring methods indicated greater independence of the two motives measured by unadjusted scores. The relationships are shown in Table 11.

Independence of the achievement- and affiliation-motive scores was necessarily considered as an index for choosing a scoring scheme for item selection. The assessment value of the motive scores derived from the two methods were highly related: Ach. vs. Ach.[a] = .94; Aff. vs. Aff.[a] = .78.

Table 11

Correlations between Adjusted and Unadjusted Methods of Scoring the Achievement-Affiliation Motivation Scales

	Ach[a]	Aff[a]	Neu	Ach	Aff
Achievement[a]	1.00	.73	-.95	.94	.14
Affiliation[a]	.73	1.00	-.91	.44	.78
Neutral	-.95	-.91	1.00	-.77	-.45
Achievement	.94	.44	-.77	1.00	-.23
Affiliation	.14	.78	-.45	-.23	1.00

N = 130 Missouri teachers.

[a] Indicates adjusted scores.

Table 12

Correlations between Unadjusted and Count Methods of Scoring the Achievement-Affiliation Motivation Scales

	Unadjusted			Count		
	Ach	Aff	N	Ach	Aff	N
Achievement		-.06	-.75	.85		
Affiliation	-.06		-.56		.83	
Neutral	-.75	-.56				.91
Achievement	.85				-.49	-.71
Affiliation		.83		-.49		-.26
Neutral			.91	-.71	-.26	

N = 120 Arkansas teachers.

Using the unadjusted scoring method, correlation coefficients were computed for item vs. total score for each motive. The total score for each individual was derived from both forms. The responses selected for inclusion in the final scale were those having the greatest positive relationship with the total score for each motive. The 30 best items were selected. (See Appendix B for a copy of the final scale.)

Test-Retest Reliability

The second phase of the scale construction was concerned with examination of the test-retest reliability of the final form of the scale. For this purpose, it was decided to use an independent sample of subjects. One hundred and twenty secondary school teachers from Arkansas were used. These 120 cases contained the 102 subjects described in Chapters II and III.

One further attempt was made to simplify the scoring method because both the adjusted and unadjusted methods were found to be rather unwieldy. This method, referred to hereafter as the count method, involved nothing more than a simple count of the number of responses selected by a teacher for the achievement, affiliation, and neutral categories respectively; that is, the score for each motive category was the number of most responses selected.

The relationships among the motive categories for the unadjusted and the count methods of scoring for the Arkansas teachers is presented in Table 12. Inspection shows a considerable loss of independence between the achievement and affiliation scores by the count method, but this is offset somewhat by the decrease in relationship between the neutral score and the two motives.

Nevertheless, the high relationships between the two methods of scoring each motive category and the simplicity of scoring recommend the count method for future employment of the scale. The test-retest reliability estimates employed the count method of scoring.

For the Arkansas sample, the test-retest reliability estimates with approximately a one-month interval for the three motive categories were:

Achievement	0.59
Affiliation	0.44
Neutral	0.68

All three estimates are highly significant.

Comparison of Strengths of Motives for Teachers

The tendency for teachers to choose one set of responses over the other also was investigated. The means and standard deviations for both the test and retest scores are listed in Table 13. The means of the three scores differed significantly in both administrations (P is less than .01). The *t*-test for correlated means was

Table 13

Means and Standard Deviations for Two Administrations of the Achievement-Affiliation Motivation Scales

	1st Administration			2nd Administration		
	Ach	Aff	Neu	Ach	Aff	Neu
Mean	39.55	31.03	19.16	39.74	30.59	18.93
Standard Deviation	6.44	4.76	7.37	7.35	6.02	8.86

N = 120 Arkansas teachers. Approximately one-month interval between administrations.

used. These findings are consistent with those based on the initial item-analysis sample and would lead one to conclude that the achievement-motive response is more characteristic of teachers than the affiliation-motive response.

Merrill's (1960) study also reported a higher mean for the achievement scores than for the affiliation scores. He also found a greater variance for the affiliation scores than for the achievement scores.

These may not be startling findings when the background of the teacher is considered. It was contended early in the study that motive manifestations are based upon learned values and exhibited by the individual according to the degree of satisfaction derived. A large portion of a teacher's present and past environment involves success characteristics in terms of academic achievement and success in general. Also, the affiliation characteristic receives a great amount of reinforcement in both the academic and the employment aspects of the teacher's environment.

An examination of the difference in variance for the three scores showed an increase in variance for each group of scores from the first to the second administration, but the difference was significant only for the affiliation scores. The increase can possibly be attributed to unfavorable testing conditions, since the second marking took place near the end of the school year when the teachers were involved in many end-of-the-year activities.

The role of the neutral scores in providing an alternative for the achievement and affiliation responses needs clarification. The test-retest reliability estimate for the neutral scores was higher than either the achievement or the affiliation scores. If chance factors were the main determinants of the neutral scores, it would be difficult to explain away the consistency with which the response is chosen. It may be argued that the reliability results from the predetermined value given the neutral score once the achievement and affiliation responses are chosen; however, the same argument may be presented for the other scores. Another possibility is that the neutral score does represent a number of factors. Two of these could conceivably be negative feelings toward the achievement and affiliation responses and manifestation of stronger motives through the neutral score.

V. THE MEASUREMENT OF TEACHERS' PROFESSIONAL ATTITUDES

The adequate assessment of any trait requires knowledge of its underlying structure. Consider intelligence--for many years it was conceived as a unitary trait. Later work suggested that intelligence was a cluster of relatively independent traits. The work of British psychologists, however, suggests that intelligence might well be conceived as a hierarchical organization of traits and subtraits. Some research in attitude measurement indicates that attitudes also might be organized in a hierarchical structure.

The two major purposes of this aspect of the study were (a) to determine if there is a hierarchical structure of teacher attitudes, (b) to determine whether this structure, if found, changes with teaching experience.

Rationale for Expecting a Hierarchy of Teacher Attitudes

Considerations prior to the study led the investigator to believe that as a teacher acquires more experience, his attitudes toward the various aspects of his teaching environment tend to become more homogeneous. The rationale for this hypothesis is based on the belief that there is an interactive effect of one attitude on another. For example, if a teacher is favorably impressed by the administration of the school in which he works, this may have a modifying and positive influence on his perception of the community in which he teaches. Conversely, if the teacher holds unfavorable attitudes toward the administration, this may have a negative influence on his attitudes toward the community. Following this same line of argument, attitudes toward the community should have a modifying influence on the attitudes toward the administration. This modifying influence may be either positive or negative depending on the attitudinal direction of the teacher toward the community. In general, attitudes toward any object in the teaching environment tend to modify attitudes toward any other object in that environment. It was believed that these interactions operate in such a way that a higher or general attitude factor toward the teaching profession is developed.

Furthermore, the belief that there is growth in the general factor was based on the concept that attitudes are acquired in much the same way as skills and knowledges. That is, with learning there is an integration of specifics into an integrated whole. In the development of teacher attitudes, it was believed that the teacher approaches the teaching situation with essentially neutral attitudes toward many aspects of the environment in which he will work. With limited experience, these attitudes are highly differentiated. As experience increases, these attitudes have the opportunity to interact, and a general factor develops. With increased experience, the general factor increases to some point. Although it was beyond the scope of this study, the investigator believed that the development of the general attitude factor might follow the ogive curve frequently found in other kinds of learning.

Hypotheses to Be Examined

1. There is a positive relationship between the number of years of teaching experience and the magnitude of the general factor. This hypothesis may be considered as the major hypothesis of this study. However, the data are useful to the examination of two other related hypotheses.

2. The test-retest reliability for any given scale will be substantially higher than the intercorrelation of that scale and any other scale within a given attitude area.

It might first appear that this hypothesis is contradictory to any hypothesis involving a general-attitude factor. However, it was believed that attitude scales could be constructed that would retain a substantial degree of specificity toward an attitude object and would measure a general factor as well. If this hypothesis were to be sustained, then diagnostic claims could be made for the various scales.

3. The matrix of intercorrelations among the scales will form a simplex when the scales from the attitude areas are arranged in the following order: (a) attitudes toward teacher-student relationships, (b) attitude toward the administration, (c) attitude toward the profession, and (d) attitude toward the community.

Related Studies

The study of the structure of attitudes generally has used the technique of factor analysis. The underlying question concerns the specificity of attitudes. That is, are there relatively few attitudes that govern or at least modify our behavior, or are there almost as many attitude continua as there are attitude objects?

Several studies concerning the structure of attitudes have been made that have not used a factor analytic approach. Allport and Schoneb (1936) and Moore (1925) conducted studies that led them to believe that all attitudes have an underlying, innate basis. The more recent factor-analytic work of Cattell (1950, p. 157) seems to support this point of view. He believes that expressed attitudes are superficial manifestations of higher-order sentiments. The highest-level sentiments presumably have their origin in biological need. Cantril (1932) also found that there is a general underlying attitudinal factor. He based his conclusions on the reaction time to stimulus words and introspection. Cantril concluded that in conscious reaction to words, a general attitude seemed to serve as a directive influence upon more specific attitudes or reactions. Blake and Dennis (1943) reported that attitude growth appeared to be similar to other kinds of intellectual growth. They reported that attitudes of white southern children toward Negroes at first tend to be general. As the child grows, the attitude toward the Negroes tends to become more differentiated.

Several other non-factor analytic studies appear to demonstrate the incorporation of specific attitudes into broader clusters. Smith (1949) interviewed a large sample of men concerning their attitudes toward personality traits and social relationships. He concluded that a person tends to perceive and judge the favorableness of an attitude in terms of his own hierarchy-of-value structure. Child and Doob (1943) have demonstrated that approval or disapproval of a trait in other people is to some extent dependent on whether the individual perceives that trait in himself. Brookhaven and Holland (1952) found that attitudes toward a given ethnic group are a function of the perceived social distance from the subject.

Relationships between attitudes and intelligence and between attitudes and interest have been shown. Downie and Bell (1953) found a significant correlation between the Minnesota Teacher Attitude Inventory and the American Council on Education Psychological Examination. Kearney and Rocchio (1955) reported that students who intend to become teachers have higher scores than those who do not. Droba (1934) and Stagner (1936) have demonstrated a relationship between attitudes and social affiliations such as the church and political party. Fishman (1957) has found the Minnesota Teacher Attitude Inventory scores related to cultural differences.

The use of factor analysis to determine the underlying structure of social attitudes has produced conflicting results. One factor which seems to come out of all of these studies is a conservatism-liberalism factor. This factor was identified as early as 1934 by Thurstone (1934). Kulp and Davidson (1934) applied the Spearman two-factor approach to five variables: (a) radicalism, (b) nationalism, (c) imperialism, (d) militarism, and (e) internationalism. He concluded that there was one general factor underlying these five variables.

Lentz (1938) developed scales to measure attitudes in the following six areas: (a) education, (b) religion, (c) government, (d) sex, and (e) nonsocial, and (f) general. He concluded that, because of the high intercorrelation (after correction for attenuation), there was a general factor which he labeled conservatism.

Lorr (1951) factor-analyzed eight attitude scales. Two factors were extracted. The first factor measured political and economic conservatism. The second factor measured moralism, individualism, and paternalism.

Eysenck (1943; 1953) identified a radical-conservative factor in two studies. In each of these studies, a second factor was derived. In one study, he labeled the second factor practical-theoretical; in the other study, toughmindedness-tendermindedness.

Stagner (1944) factor-analyzed 11 scales of agressive social attitudes. The extracted factor suggested a general aggressive factor. A second factor came out that appeared to be a conservatism factor.

Not all studies have identified conservatism as a unitary factor. Kerr (1952) found that conservatism depended on the attitude object. He identified five factors: (a) political, (b) economic, (c) religious, (d) social, and (e) esthetic. Estes and Estes (1944) developed 11 short attitude scales. Nearly all of the intercorrelations between the scales fell below .30.

Several studies have produced entirely different sets of factors. Williams and Wright (1955) extracted two factors from a 25-item voting questionnaire. The investigator labels these factors as threat orientation and group identification. Cattell and Miller (1952) identify the following attitude areas: (a) escape, (b) gregariousness, (c) self-assertion, (d) appeal, and (e) curiosity.

Diggory (1953) has shown that the results of factor analysis are influenced to some extent by the perceived role of the subjects. Separate factor analyses of responses by men and women on 10 Thurstone attitude scales yielded the same factors but different loadings for men and women.

There are two practices in the study of attitudes that make it difficult to compare the findings of separate studies. First, there is a tendency for many investigators to develop their own terminology. The second, and more serious shortcoming, is the failure to use a standard set of reference variables (Sells & Trites, 1960). These problems become particularly apparent when we try to relate factor-analytic studies of teacher attitudes to other studies of social attitudes.

Kerlinger and Kaja (1959) developed two 10-item Likert-type scales. One of the scales measured the traditional point of view in education; the other scale, the progressive point of view. Kerlinger (1959) concluded that the two dimensions are independent. The correlation between the two scales was -.24.

Coffman (1951) factor-analyzed nine teacher-attitude scales. He extracted two factors. The first factor had its highest loading on a general like-to-teach scale. The factor also had high loadings on scales measuring liking for children and liking for the profession. The second factor had its highest loadings on scales measuring relations with the principal, relations with fellow teachers, and satisfaction with degree of recognition.

Wandt (1952) developed eight 12-item attitude scales. These scales measure attitudes toward: (a) administrators, (b) supervisors, (c) pupils, (d) parents, (e) teachers, (f) nonteaching employees, (g) classroom procedures, and (h) administrative procedures. All statements were positively oriented. As a second part of this study, he rewrote all items with a negative orientation. Two centroid factor analyses were made: one using only the positively oriented items, and one using only the negatively oriented items. The centroids were rotated to oblique simple structure. The two factor analyses gave essentially the same results. Three factors were identified:

(a) attitude toward the administration, (b) attitude toward nonteaching personnel, and (c) attitude toward pupils. The attitude-toward-pupil factor did not correlate very highly with the administration and nonteaching personnel factors. The last two factors were highly correlated. The investigator suggested that they might be logically combined.

Ryans (1953) factor-analyzed a 20-item attitude scale administered to secondary teachers. Six centroids were extracted and rotated to oblique simple structure. The six factors were identified as (a) academic functions, (b) democratic viewpoint toward parents, (c) unidentified, (d) teacher control and singleness of purpo , (e) teacher's willingness to accept students' capabilities, and (f) approval of homework.

Construction of the Teacher Attitude Inventory

Some Preliminary Considerations

A method developed by Likert (1932) has frequently been used in attitude measurement. The equal-appearing interval technique, developed by Thurstone and Chave (1929), has also been extensively employed. A fairly new approach to scaling has been developed by Guttman (1944).

While each of these approaches has considerable merit, it was felt by the investigator that none of them exactly met the needs of this study. The investigator agrees with McNemar (1946) that attitude scales should be as homogeneous as possible. This position has not gone unchallenged. Ryans (1960, p. 141) has questioned the desirability and feasibility of homogeneous attitude scales. In any event, this investigator felt that short, homogeneous scales best met the needs of the study. It was believed that neither the Likert approach nor the equal-appearing interval technique would yield the relatively short, homogeneous scales needed. Some preliminary work with the Guttman scaling technique by the investigator indicated that this technique was not practicable.

The decision was made to use a technique developed by DuBois, Loevenger, and Gleser (1952). It was expected that this technique would yield shorter and more homogeneous scales than would other approaches. Homogeneous scales are desirable for two reasons: (a) homogeneous scales are more interpretable than ones with heterogeneous content, and (b) factorial studies have more meaning if one can be certain of the content of each scale.

General Format of the Scale

The initial step in the development of the inventory required a decision on the broad areas to be covered, as well as subareas and types of items that each area could contain. The literature was examined to determine what areas had been previously measured and for suggestions of possible new areas. Sources that were particularly helpful were Barr, Burton, and Brueckner (1947); Hartman (1938); Martindale (1951); Leipold and Yarbrough (1949); Chase (1951); Hill (1941); Redefer (1959); Bidwell (1956); and Hunter (1955).

An examination of these scources, plus the investigator's intuition, suggested that there are probably four major attitude areas or objects within the life space of the teacher. These are the pupils, the administration, the profession, and the community. There is no intention to imply that there aren't other important attitude areas as well. However, these four areas seem to provide a logical framework within which it is possible to work.

Within each of these four major areas, five subareas were developed. For example, the attitude-toward-student area contained five subscales. Each scale presumably measured some different aspect of teachers' attitudes toward the student. The same procedure was followed for each of the other three major areas. Each subscale contained four items. By following this format, a pool of 80 items was constructed.

Item Construction

It was the intent of the investigator to make each subarea as homogeneous as possible. The four items in each subarea were written with the hope that all measured the same specific attitude. The best procedure would have been to have four completely different items. In many of the subareas it appeared impossible to devise four truly different items that, the investigator was confident, measured the same specific attitude. When it appeared that four different statements could not be written, the investigator followed the procedure of rephrasing a simple statement four different ways. In order to avoid a response set, two of the items in each subarea were written with a positive orientation toward the attitude object. The remaining two items were written with a negative orientation toward that attitude object.

A booklet, Teacher Attitude Inventory, Form I, containing 80 items, in random order, and instructions was prepared. The subjects were instructed to respond to the inventory of a five-choice, Likert-type response, IBM answer sheet. In responding to each item, the subject could indicate strong agreement, agreement, uncertainty, disagreement, or strong disagreement with that item.

Sample of Teachers Used for Item Selection

It was necessary to administer the initial inventory of 80 items to a sample of teachers in order to determine the number and nature of the scales to be retained in the final instrument.

A sample of Missouri teachers was used in the scale development stage. This procedure insured against the possibility of using a subject twice: once in scale construction and again in the actual study.

Ten schools were sampled. One school was in the suburbs of St. Louis, Missouri. Two schools were in Springfield. The remainder of the sample schools were in smaller communities in southwestern Missouri.

Approximately 600 copies of the attitude inventory were sent to these 10 schools. Each teacher received this instrument along with directions and a covering letter explaining the nature of the study. The subjects were guaranteed anonymity for themselves as well as the school. This was insured by requiring no identification data on the answer sheet. The teachers were instructed that the completion of the instrument was entirely voluntary.

One hundred and sixty-six usable answer sheets were obtained. The percentage of returns was rather small. However, the sampling technique did not permit a follow-up. No estimate can be made of how representative this sample is of Missouri teachers. The voluntary aspect of the sampling procedure undoubtedly introduced a selection factor of some sort. It cannot be stated with certainty what effect this selection factor had on the scale construction. However, certain features of the homogeneous keying technique would seem to minimize the effect of selection. Because the Missouri sample consisted of all voluntary subjects, it might be reasonably assumed that these subjects were more favorably disposed toward teaching than teachers in general. It can probably be assumed also that the homogeneity of attitudes in this sample is greater than that of teachers in general. This homogeneity would result in a reduction in item variance. However, a reduction in item variance would also tend to be accompanied by a reduction in the inter-item covariances. The homogeneous keying technique, discussed in the next section, relies on the covariance-to-variance ratio for scale construction. Since any selective sampling factor tends to reduce both the item variances and inter-item covariances, it appears that the covariance-to-variance ratio remains relatively invariant. Therefore, sampling biases would not seem to drastically affect the item selection.

Construction of Homogeneous Keys

The technique of homogeneous keying was developed by DuBois et al. (1952). The purpose of the technique is to develop sets of scales from a pool of items. Each derived scale should have the following two important characteristics: (a) Each scale should measure only one factor. (b) Each scale should be as independent as possible of all other scales derived from the item pool.

Four 20-item variance-covariance matrixes were prepared for each of the four major attitude areas. These matrixes are reported in North (1961). The homogeneous keying technique was applied to these four separate matrixes.

In constructing the scales, two departures from the procedure of DuBois et al. (1952) were made. First, rather than select the combination of 3 items with highest inter-item covariances from the total of 20 items, the best combination of 3 items within an *a priori* scale of four items was first selected. The rationale for this departure was that the meaning of the scale was more likely to be retained since the items were initially written to be highly homogeneous. It also seemed likely that any other items that might better have been included in the initial cluster would subsequently add in when new items were combined with the cluster. In practice, the decision turned out to be of no consequence, because the items within each subarea had higher inter-item covariances among themselves than with items of other subareas.

A second departure from the recommendation by DuBois et al. (1952) was made in discarding their criterion for when to stop adding items to the scale. They recommend that as long as the C/V ratio rises by adding new items, the process should be continued. It is only when the C/V ratio no longer rises with the addition of a new item that the process should be terminated for that scale. The underlying assumption is that as the C/V ratio increased, the Kuder-Richardson Formula 20 would also increase. While the investigator's criterion probably holds for items with low inter-item covariances, it does not seem to apply to the present data. It was found that by following the investigator's criterion, all 20 items added into the scale for any given attitude area. However, the Kuder-Richardson Formula 20 frequently would drop with the addition of a new item. Since the Kuder-Richardson Formula 20 is the more dependable of the two criteria, it was retained and the C/V ratio was discarded. The C/V ratio was used, however, to determine which item should be the next one to be added to the cluster.

Final Form of the Teacher Attitude Inventory - Form II

It will be recalled that each of the four major attitude areas was subdivided into five subareas, each subarea consisting of four items. The homogeneous keying procedure was applied to each of the four major areas separately. This resulted in the final development of the Teacher Attitude Inventory, Form II. Form II contained 14 subareas, organized and labeled as follows. (The number of items in each subscale and the Kuder-Richardson Formula 20 coefficients appear in parentheses.)

I. Attitude toward Teacher Pupil Relations

1. Teacher vs. Self-Evaluation (3 items, 0.76)
2. Academic vs. Social Skills (4 items, 0.75)
3. Student Competition (3 items, 0.70)

II. Attitude toward the Administration

4. Physical Environment (3 items, 0.60)
5. General Attitude toward the Administration (12 items, 0.77)

III. Attitude toward the Profession

6. Satisfaction with Teaching (3 items, 0.82)
7. Teacher Preparation (3 items, 0.74)
8. Nonprofessional Employment (3 items, 0.60)
9. Professional Activities (4 items, 0.60)

IV. Attitude toward the Community

10.	Parent-Teacher Relationships	(3 items, 0.85)
11.	Community Demands on Free Time	(3 items, 0.86)
12.	Prestige of the Profession in the Community.	(3 items, 0.82)
13.	Standards of Living in the Community	(3 items, 0.85)
14.	Community Restrictions on the Teacher's Private Life.	(4 items, 0.74)

These 14 subscales used 55 items of the original 80-item pool. These 55 items were placed in random order and mimeographed. The 55-item form was labeled Teacher Attitude Inventory, Form II. See Appendix C.

Analysis of Form II

Preliminary Examination of the Data

The final form of the Teacher Attitude Inventory, Form II, was administered to 233 experienced teachers in Arkansas. This sample is described in Chapter II. One hundred and twenty of these individuals were retested after approximately a one-month interval.

Before the data were examined to determine whether the three hypotheses were substantiated, a preliminary analysis of some of the characteristics of the Teacher Attitude Inventory was made.

One hundred and twenty Arkansas teachers took the Teacher Attitude Inventory, Form II, twice. A test-retest reliability was computed for each subscale based on the scores of these 120 subjects. These reliability estimates are presented in the right-hand column of Table 14. In general, the reliabilities are lower than the investigator would have hoped. Scales 1, 2, and 3, all in the Teacher-Pupil Relationship attitude area, have reliabilities below .60. The reliability of Scale 9 is also below .60. With the exception of the Teacher-Pupil Relationship area, all other areas contain scales that have reliabilities above .70.

All subscales, with the exception of Scale 5, contain only three or four items. Perhaps with such short scales, these reliabilities are about as high as can be reasonably expected.

The correlation of each subscale with the number of years of teaching experience was also computed. These correlations are also presented in Table 14. There are two correlations for each subscale with experience, because the inventory was given twice. These correlations all tend to be quite low. With a sample of 120 subjects, a correlation must equal or exceed .178 to be significantly different from zero at the 5 per cent level. Scale 4, Attitude toward the Physical Environment, is the only scale that is significant on both testings. It is also negative. Apparently the more experienced teacher tends to be more negative toward the environment. Three other scales are statistically significant on one testing. These are Scales 10, 11, and 13. All three scales are in the Attitude toward the Community area. Notice also that with the

Table 14

Test-Retest Data for the Teacher Attitude Inventory

Teacher Attitude Inventory Subscales	Mean		Standard Deviation		Correlation with Years of Experience		Test-Retest Reliability
	First	Second	First	Second	First	Second	
1. Teacher vs. Self-Evaluation	10.4	10.4	2.7	3.0	.11	.02	.52
2. Academic vs. Social Skills	15.3	15.4	2.5	2.7	.01	.09	.51
3. Student Competition	7.8	7.9	2.5	2.7	.02	.07	.59
4. Physical Environment	3.9	4.2	2.2	2.5	-.24	-.23	.76
5. General Attitude toward the Administration	28.4	28.5	6.7	7.4	.00	-.05	.76
6. Satisfaction with Teaching	10.2	10.1	3.2	3.1	.11	.14	.80
7. Teacher Preparation	7.6	7.7	2.9	2.9	.08	.09	.80
8. Nonprofessional Employment	7.1	7.3	2.4	2.2	.08	.05	.71
9. Professional Activities	15.2	15.5	2.7	2.6	.05	.10	.54
10. Parent-Teacher Relationship	9.6	9.8	2.8	2.7	.13	.18	.63
11. Community Demands on Free Time	11.7	11.8	1.9	2.1	.13	.20	.60
12. Prestige of Profession in the Community	12.9	12.9	3.6	3.6	.04	.02	.72
13. Standard of Living in the Community	7.1	7.1	2.8	2.9	.20	.15	.74
14. Community Restrictions on Private Life	13.1	13.3	3.6	3.7	.03	.12	.76

Note: Mean number years' experience = 4.5. Standard deviation = 2.7 years. N = 120 Arkansas teachers.

exception of Scale 5, these three scales also have the highest correlations of any of the scales on the alternate testing. The trend for the more experienced teachers to be more favorably disposed toward the community does not seem hard to explain. Probably those teachers who do not like a community go elsewhere. These findings seem to offer some evidence for construct validity of the community scales.

A third study was made of the characteristics of the Teacher Attitude Inventory. The correlation of each scale with the total score on the Minnesota Teacher Attitude Inventory was computed. These correlations are presented in Table 15. The Minnesota Teacher Attitude Inventory was used only during the first part of the project. Therefore, scores on both measures were available for only 87 subjects.

With a sample of 87 subjects, a correlation coefficient must equal or exceed .212 to be statistically significant at the 5 per cent level. Seven of the scales are significantly related to the Minnesota Teacher Attitude Inventory. They are 2, 3, 4, 7, 9, 10, and 12. Scale 4 is negatively related, however. In spite of the fact that all correlations are low, the Teacher Attitude Inventory seems to be measuring the same factor as the Minnesota Teacher Attitude Inventory.

It had been the intent of the investigator to have the scales in the Teacher-Pupil Relations area measure the same attitudes as the Minnesota Teacher Attitude Inventory. The low correlations of Scales 1, 2, and 3 suggest that this end was not achieved. In part, these low correlations might be explained by the high degree of specificity of each scale. If these three scales were combined, it seemed possible that the resulting multiple correlation would be substantially larger than any of the zero-order correlations. The multiple correlation for these three scales with the Minnesota Teacher Attitude Inventory is .29. It must be concluded that these three scales are not closely related to the Minnesota Teacher Attitude Inventory. It would have been possible to raise the multiple correlation by adding other scales to these three. However, there seemed to be little logic in doing so.

For most practical purposes it would not be desirable to have 14 attitude scores. The 14 scores from the Teacher Attitude Inventory can be reduced to four scores by combining scores from the scales within each area. For example, the scores obtained from the three scales in the Teacher-Pupil Relations area may be added together to yield a single score. The scores from the scales in each of the other three areas could be treated in the same fashion.

As part of the preliminary analyses of the inventory, these combinations were made. Test-retest reliabilities were computed. The reliabilities are presented in the right-hand column of Table 16. Notice that the reliabilities for the combined scales tend to fall at about the middle of the range of reliabilities of the individual scales within each area.

The Spearman-Brown Prophecy Formula has been developed to show that reliability will increase when a measure is lengthened a given number of times. It would initially appear that the combination of scales within a

Table 15

Correlations of the Teacher Attitude Subscales with the Minnesota Teacher Attitude Inventory

Teacher Attitude Inventory Subscale	Mean	Standard Deviation	Correlation with MTAI
1. Teacher vs. Self-Evaluation	10.3	2.8	.20
2. Academic vs. Social Skills	15.1	2.7	.22
3. Student Competition	7.9	2.6	.23
4. Physical Environment	10.8	2.3	.27
5. General Attitude toward the Administration	30.9	6.5	.12
6. Satisfaction with Teaching	10.2	3.2	.12
7. Teacher Preparation	6.6	2.6	.26
8. Nonprofessional Employment	6.6	2.3	-.03
9. Professional Activities	15.3	2.6	.27
10. Parent-Teacher Relationship	9.7	2.8	.31
11. Community Demands on Free Time	12.1	1.7	.15
12. Prestige of Profession in the Community	13.3	3.7	.24
13. Standard of Living in the Community	7.0	2.6	.01
14. Community Restrictions on Private Life	15.2	3.1	.19

Note: The mean and the standard deviation for the Minnesota Teacher Attitude Inventory are 20.6 and 39.2, respectively. N = 87 Arkansas teachers.

Table 16

Intercorrelations and Reliabilities of the Teacher Attitude Subscales Combined by Area

Scale Attitude Toward		Attitude Area 1	2	3	4	Test-Retest Reliability
1. Pupils	(1, 2, and 3)		.14	.03	.28	.53
2. Administration	(4 and 5)			.45	.59	.78
3. Profession	(6, 7, 8, and 9)				.40	.77
4. Community	(10, 11, 12, 13, and 14)					.68

N = 120 Arkansas teachers.

given attitude area is the equivalent of lengthening a measure and that the reliability should be greater than the reliabilities of the individual scales. However, the Spearman-Brown formula makes the assumption that the added increments of the measure are equivalent to the initial measure. The process of homogeneous keying makes it impossible for the scales in this study to meet that assumption. If two scales had been equivalent, they would have combined in the scaling process.

The intercorrelations between the combined scales are presented in Table 16. These intercorrelations are sufficiently high to suggest a general factor. On the other hand, the intercorrelations are low enough to suggest that each of the combined scales is also measuring something unique.

Examination of Hypothesis 1

The total group of 233 Arkansas teachers was divided into a low-experience group and a high-experience group. There were 117 subjects in the low group and 116 subjects in the high group. The low group contained subjects with one through three years of experience. The mean number of years of experience was 2.10. The standard deviation was .78. The high group contained subjects with four through eleven years of experience. The mean and the standard deviation were 6.20 and 1.98 years, respectively.

Intercorrelation matrixes for the 14 scales were computed for each group separately. The intercorrelations, means, and standard deviations are presented in Tables 17 and 18. Notice that for any given scale, the mean and the standard deviation are approximately the same for both the low and high group. Substantial differences in the means would not have proved troublesome. However, large differences in the standard deviations that were systematically associated with one group would have made the factor-analysis interpretation far more difficult. For example, if the standard deviations for the high-experience group had all tended to be smaller, we would not have known whether there was a change in attitude structure or simply a selection factor. It might have been that teachers who were extreme attitude deviates simply left the group.

The fact that the standard deviations match as well as they do overcomes, in part, the objection to not having used matched groups. Ideally, subjects in each group should have been matched on teaching area, school, sex, and possibly other variables. It appeared that any matching of the subjects would have seriously reduced the number of cases. Therefore, the analysis was made on the gross group with no further effort to impose additional controls.

In order to determine the tenability of Hypothesis 1, these two matrixes were factor-analyzed. It was considered desirable to use a factor-analysis method that would clearly isolate the general factor. The best technique available appeared to be the hierarchical factor-analysis technique developed by Schmid and Leiman (1957). There were two reasons for believing that this technique best met the requirements of this study: (1) The technique appears to yield an adequate solution regardless of the number of levels of higher-order factors. (2) The solution yields

Table 17

Intercorrelations of Teacher Attitude Subscales
for Low-Experience Teachers

Teacher Attitude Inventory Subscales		2	3	4	5	6	7	8	9	10	11	12	13	14
1. Teacher vs. Self-Evaluation		18	16	06	13	04	25	08	18	06	18	09	05	04
2. Academic vs. Social Skills			03	-05	16	18	32	01	08	07	26	18	19	05
3. Student Competition				-08	-01	06	18	-07	18	03	16	10	20	27
4. Physical Environment					23	07	-12	-01	-01	16	19	33	28	10
5. General Attitude Toward the Ad.						26	24	22	46	24	40	65	18	43
6. Satisfaction with Teaching							19	01	28	13	22	33	29	32
7. Teacher Preparation								06	35	17	11	25	18	01
8. Nonprofessional Employment									29	13	-04	18	05	-17
9. Professional Activities										22	11	40	11	36
10. Parent-Teacher Relationship											13	52	24	10
11. Community Demands on Free Time												27	23	44
12. Prestige of Profession in the Com.													34	34
13. Standard of Living in the Com.														27
14. Community Restriction on Priv. Life														
Mean	9.8	15.3	7.7	3.3	28.6	10.4	7.6	6.9	15.1	9.7	11.6	13.2	6.9	13.1
S. D.	2.7	2.2	2.3	2.0	6.3	2.9	2.8	2.2	2.7	2.6	1.9	3.7	2.6	3.4

Note: Values of r's to two decimal places; decimal points omitted.
N = 117 Arkansas teachers.

Table 18

Intercorrelations of Teacher Attitude Subscales for High-Experience Teachers

Teacher Attitude Inventory Subscales		2	3	4	5	6	7	8	9	10	11	12	13	14
1. Teacher vs. Self-Evaluation		16	38	19	32	05	03	05	14	16	04	29	13	12
2. Academic vs. Social Skills			28	-10	06	02	27	-17	16	05	-05	08	11	-02
3. Student Competition				02	09	08	-01	-08	-01	25	05	22	25	16
4. Physical Environment					22	23	-17	18	-01	09	09	15	22	27
5. General Attitude Toward the Ad.						33	05	07	15	26	34	45	28	32
6. Satisfaction with Teaching							23	12	01	22	07	39	34	19
7. Teacher Preparation								10	13	-02	-13	11	06	-02
8. Nonprofessional Employment									20	-02	-18	05	11	00
9. Professional Activities										12	18	28	08	23
10. Parent-Teacher Relationship											10	44	01	28
11. Community Demands on Free Time												26	07	48
12. Prestige of Profession in the Com.													38	35
13. Standard of Living in the Com.														09
14. Community Restrictions on Priv. Life														
Mean	10.5	15.0	7.8	4.4	29.7	19.9	6.9	7.2	15.1	9.5	11.7	13.3	7.5	13.4
S. D.	2.5	2.7	2.4	2.3	6.0	3.1	2.8	2.4	2.8	2.7	1.8	3.1	2.7	3.3

Note: Values of r's to two decimal places; decimal points omitted.
N = 116 Arkansas teachers.

orthogonal factors. The first of these two features was considered desirable because there was no way of knowing the number of levels of higher-order factors that would be obtained. The second advantage, orthogonality of factors, greatly facilitates interpretation.

The exact procedure for developing a hierarchical factor solution is given by Schmid and Leiman (1957). The procedure may use any factor solution as its point of departure. In the present study, centroid solutions were developed from the correlation matrixes of the high- and low-experience groups. Five centroid factors were extracted for both groups. However, the loadings on the fourth and fifth factors in both groups were so low that they were considered largely error. The remaining three centroids for each group were rotated to normalized varimax structures (Kaiser, 1958). These varimax structures, in turn, were rotated to hierarchical structures, Tables 19 and 20.

In order to test Hypothesis 1, it is necessary to consider only Factor I for these two tables. If the hypothesis is to be supported, the mean of the factor loadings must be greater for the high-experience group than for the low-experience group. The mean of Factor I loadings for the high group is .405. The mean of the Factor I loadings for the low group is .481. The direction of the difference between these two means is opposite to the hypothesized direction. The hypothesis must be rejected.

The factorial structure of the scales may be examined for possible differences and similarities between the two groups. The investigator had anticipated that there would be two or more higher levels of factors. This much was borne out by the study: Factors I-III. However, it was anticipated that the specific factors would be identifiable in terms of the attitude objects. Specifically, it was believed that there would be teacher-pupil relationships, administration, profession, and community factors. This belief was not borne out by the study. If the two best defining variables of each factor are selected, more than one attitude area is represented. The only exception is Factor VI.

The general factor is best defined by Scale 12, Prestige of the Profession in the Community,in the low group. In the high group no one scale is an outstanding definer.

Factors II and III are group factors. They represent the second level in the hierarchy. These factor loadings tend to be much smaller than on the general factor. Factors II and III will be treated together, because their order is of no consequence. Scale 5, General Attitude toward the Administration, and Scale 12, Prestige of the Profession in the Community, are the best definers for the low group on Factor II, and for the high group on Factor III. Scale 5 contains a number of items dealing with recognition and meeting the needs of the teachers by the school administration. These two group factors seem to be measuring teacher prestige or recognition at a lower level. Probably they are tapping recognition by the administration. Scale 8, Nonprofessional Employment, is the only definer of Factor III for the low group. Scale 8 and Scale 6, Satisfaction with Teaching, seem to define Factor II for the high group. It seems reasonable that dissatisfaction with teaching should be associated with a

Table 19

Hierarchical Factor Solution for Low-Experience Teachers

Teacher Attitude Inventory Subscale	I	II	III	IV	V	VI	h^2
1. Teacher vs. Self-Evaluation	42	04	10	-01	16	14	23
2. Academic vs. Social Skills	34	09	03	10	15	-01	15
3. Student Competition	37	06	07	01	21	04	19
4. Physical Environment	42	04	10	04	21	12	25
5. General Attitude Toward the Ad.	58	19	00	40	02	00	54
6. Satisfaction with Teaching	39	08	05	22	-05	12	23
7. Teacher Preparation	49	09	08	15	09	12	30
8. Nonprofessional Employment	36	-01	13	00	00	27	22
9. Professional Activities	57	11	09	27	-05	21	47
10. Parent-Teacher Relationship	50	10	07	13	16	07	32
11. Community Demands on Free Time	54	10	08	24	01	17	39
12. Prestige of Profession in the Com.	73	22	07	34	22	-04	75
13. Standard of Living in the Com.	52	09	09	22	-05	21	38
14. Community Restrictions on Priv. Life	52	10	08	24	-02	17	38

Note: Factor loadings correct to two decimal places; decimal points omitted.
N = 117 Arkansas teachers.

Table 20

Hierarchical Factor Solution for High-Experience Teachers

Teacher Attitude Inventory Subscale	I	II	III	IV	V	VI	h^2
1. Teacher vs. Self-Evaluation	38	06	20	24	09	02	26
2. Academic vs. Social Skills	41	18	11	-01	24	02	27
3. Student Competition	44	17	14	16	08	12	29
4. Physical Environment	35	12	12	13	08	08	18
5. General Attitude Toward the Ad.	44	02	28	39	06	00	42
6. Satisfaction with Teaching	49	20	14	26	05	23	43
7. Teacher Preparation	29	11	10	01	19	-02	14
8. Nonprofessional Employment	29	21	01	00	00	19	16
9. Professional Activities	32	08	15	20	04	05	17
10. Parent-Teacher Relationship	42	12	18	23	06	08	28
11. Community Demands on Free Time	48	18	16	07	23	03	35
12. Prestige of Profession in the Com.	42	-02	32	49	-01	00	52
13. Standard of Living in the Com.	40	12	16	27	-03	14	29
14. Community Restrictions on Priv. Life	54	12	25	25	19	01	47

Note: Factor loadings correct to two decimal places; decimal points omitted.
N = 116 Arkansas teachers.

greater willingness to take an outside job.

Before leaving the group factors, it should be noted that the loadings are higher for the high-experience group than for the low-experience group. Perhaps it is at this level, rather than at the highest level, that there is growth in generalized attitudes.

Factors IV, V, and VI are the lowest-level common factors in the hierarchy. Factor IV has as its definers Scales 5 and 12, just as the higher-order factors. Apparently, this procedure of factor analysis tends to spread the factor weights across several factors. It is impossible to give an additional interpretation beyond that given for the group factors.

Factor V has as its definers Scale 3, Student Competition, Scale 4, Physical Environment, and Scale 12, Prestige of the Profession in the Community, in the low group. It is rather difficult to determine what is common to these variables. Perhaps the teacher perceives the presence or absence of adequate facilities as an indication of prestige. In the high group, Scale 2, Academic vs. Social Skills, and Scale 11, Community Demands on Free Time, prove to be the best definers of Factor V. An examination of the items in these two scales seems to indicate that a teacher who emphasizes social skills is the one who believes that the community does not make undue demands on his time. Perhaps this factor comes the closest to a teaching-philosophy factor.

Factor VI has its two best definers in the Attitude toward the Profession for both groups. Scale 8, Nonprofessional Employment, and Scale 9, Professional Activities, define this factor best for the low group. Scale 6, Satisfaction with Teaching, and Scale 8, Nonprofessional Employment, define this factor in the high group.

Factor VI is the only factor that developed in the anticipated manner. It appears that factors tend to organize in some other fashion than around concrete attitude objects.

There seems to be a tendency for the attitudes to organize around the psychological needs of the individual. The scales in this study were not constructed to adequately test this possibility. A follow-up of this lead seems to be a worthwhile area of research.

Examination of Hypothesis 2

Hypothesis 2 stated that the test-retest reliabilities of the subscales would be sufficiently high and the intercorrelations between subscales sufficiently low to produce reliable differences between subscale scores. This condition is necessary if confidence is to be placed in the differences between scale scores. As the correlation between two scales approaches the reliabilities of those two scales, the greater the probability that an observed difference in scores is due to chance.

The reliability of the difference (Gulliksen, 1950, p. 353) was determined for all pairs of subscales within each area. No comparisons were made between scores in one area with scores in another area. It was felt that such a comparison had no meaningful diagnostic value.

The matrix obtained from the sample of 120 Arkansas teachers was used for this aspect of the study. The intercorrelation matrix is presented in Table 21.

The reliability of the difference estimates are given in Table 22. The values in the diagonal cells are the test-retest reliabilities of the scales. The other values are reliability of the difference estimates for the appropriate pairs of tests.

The reliability of the difference estimates are lower than would ordinarily be considered satisfactory. These low values are largely due to the low reliabilities of the scales.

The only pairs of scales that have reliability of the difference estimates in excess of .70 are in the Attitude toward the Profession area. The lowest reliability of the difference estimates are in the Attitude toward Teacher-Pupil Relationship area. These estimates would have to be considered totally unsatisfactory.

It would appear that the technique of developing diagnostic scales through the homogeneous keying technique has promise. However, the reliability of the scales should be considerably larger before satisfactory diagnosticity can be claimed.

Examination of Hypothesis 3

The simplex concept was developed by Guttman (1954). The underlying principle is that when variables lie along a continuum, the resulting matrix of intercorrelations has certain characteristics. That is, adjacent variables on this continuum will have the highest intercorrelations. A variable that is not adjacent to a given variable will have a lower correlation than an adjacent one. Moreover, as two variables become farther apart on the continuum, the correlation between these two variables will decrease.

There is a second requirement that must be met in order to designate a correlation matrix as a simplex. Suppose that a matrix meets the above requirements. That is, Variable x correlates more highly with Variable y than with Variable z. The correlation of Variable y with z is higher than Variable y with Variable w, etc. The second requisite is that the partial correlation between two variables that are one step apart must be zero when the intermediate variable is partialed out. For example, the zero-order partial between Variables x and z must be zero when Variable y is partialed out. This condition must prevail throughout the matrix.

If a matrix can be found that meets the above conditions, it is said to be a simplex. However, the nature of the underlying continuum is left to the imagination of the investigator.

Hypothesis 3 stated that a simplex would be found for the continuum: teacher-student relationships, administration, profession, and community.

Table 21

Intercorrelations of Teacher Attitude Subscales

Teacher Attitude Inventory Subscale	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Teacher vs. Self-Evaluation	17	35	15	14	-06	03	01	07	14	11	11	04	12
2. Academic vs. Social Skills		24	-14	06	14	26	-19	05	04	05	09	13	04
3. Student Competition			02	05	08	05	-20	09	18	14	20	15	33
4. Physical Environment				30	07	-26	19	06	11	07	25	30	20
5. General Attitude Toward the Ad.					30	16	16	30	26	31	56	22	41
6. Satisfaction with Teaching						26	05	12	15	19	42	36	26
7. Teacher Preparation							-07	14	05	-04	21	07	05
8. Nonprofessional Employment								18	02	-18	08	02	-20
9. Professional Activities									17	15	33	09	30
10. Parent-Teacher Relationship										04	50	02	03
11. Community Demands on Free Time											24	14	51
12. Prestige of Profession in the Com.												37	31
13. Standard of Living in the Com.													19
14. Community Restrictions on Priv. Life													

Note: Decimal points omitted. N = 120 Arkansas teachers.

Table 22

Reliability of the Difference Estimates of Teacher Attitude Subscales

Teacher Attitude Inventory Subscale	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Teacher vs. Self-Evaluation	52[a]	42[b]	31											
2. Academic vs. Social Skills		51	41											
3. Student Competition			59											
4. Physical Environment				76	67									
5. General Attitude Toward the Ad.					76									
6. Satisfaction with Teaching						80	73	77	62					
7. Teacher Preparation							80	77	62					
8. Nonprofessional Employment								71	54					
9. Professional Activities									54					
10. Parent-Teacher Relationship										63	60	35	68	67
11. Community Demands on Free Time											60	55	62	35
12. Prestige of Profession in the Com.												72	57	62
13. Standard of Living in the Com.													74	69
14. Community Restrictions on Priv. Life														76

Note: Decimal points have been omitted.

[a] Diagonal cells give test-retest reliabilities.

[b] Off-diagonal cells give reliabilities of differences.

N = 120 Arkansas teachers.

Attitudes toward teacher-pupil relationships were considered to be possibly closer to attitudes toward the administration than to attitudes toward either the profession or the community. In order not to rule out any other simplex, all possible zero-order partials were computed for each pair of scales. The matrix given in Table 21 was used for this step. A systematic search was then made for possible four-variable simplexes. All correlations above .30 were selected as possible initial pairs of variables for a simplex. A search was then made for a third variable which yielded a zero-order partial of less than .10 when one member of the initial pair was partialed out. Because only one partial is involved with a cluster of three scales, several possible clusters were found. However, a matrix must contain at least four variables to be considered truly a simplex. No combination of four variables could be found that satisfied the necessary requirements for a simplex. Hypothesis 3 must be rejected.

VI. CONCLUSIONS

In multivariate studies of human characteristics, the conclusions which may be drawn are a function of the number of traits and groups investigated. In hypothesis-testing research, the relevant conclusions are determined by the number of hypotheses established to guide the study. However, in an exploratory or descriptive study of the type made here, the number of conclusions drawn is a function of the investigator's decision. It is hoped that sufficient data have been presented which will enable readers to look for specific bits of information which may not have been considered by the investigator to merit more elaboration than found in the previous discussion of various aspects of the study or in the conclusions presented below.

The following conclusions must be considered in light of the samples investigated and the data-gathering instruments used in this study. These conclusions should not be construed to generalize to other samples or to traits measured with other instruments. It is hoped that these conclusions, taken with conclusions of past studies and with studies yet to be undertaken, will contribute to our general knowledge of the teaching complex.

1. The characteristics of the experienced and student teachers studied were much less interrelated than was anticipated. The independence of these traits are partly a function of the unreliability of the instruments. However, it seems reasonable that a large part of the uniqueness of each variable is reliable specificity.

2. The common factor variance of the experienced- and student-teacher traits showed that each complex did possess structure. Five of seven factors for the variables common to both groups showed remarkable similarity, thus indicating stability of structure from the student-teaching stage of professional development to the experienced-teaching stage. These five factors relate to professional development, achievement motivation, affiliation motivation, professional attitudes, and knowledge about students.

3. No simplex structure involving more than four variables was found among the intercorrelations for either the experienced- or the student-teacher traits.

4. Significant differences were found for some traits for experienced and student teachers. However, no differences were found for the teaching area specialties.

5. The achievement and affiliation motives of teachers can be reliably measured with a structured self-response instrument. The degree of relationship between these two traits is a function of the scoring method used. Nevertheless, consistent with studies using other instruments, the achievement motive seems more dominant for teachers than the affiliation motive.

6. Only a slight hierarchical pattern of professional attitudes was found for the attitude referents: pupils, administration, profession, and community. The hierarchy was not sufficiently well defined to suggest that attitudes were structured as well as intelligence traits.

7. Attitudes toward various aspects of the teaching environment do not become more homogeneous with more teaching experience.

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Appendix A

TEST: KNOWLEDGE OF EDUCATIONAL PSYCHOLOGY

1. Frank (aged 20) is sour and rude. He has a chip on his shoulder. A trained counselor would view him in this way:
   a. If Frank would change his attitude, he could be helped.
   b. Frank evidently doesn't know how to satisfy his needs.
   c. Frank's unfortunate character was probably fixed in early childhood.
   d. Frank's behavior would change if people were pleasant to him.

2. A person whose system of values differs from those of his group
   a. is likely to become neurotic.
   b. experiences emotional conflict.
   c. is likely to be a successful reformer.
   d. will be a superior problem-solver.

3. Constant criticism of the pupil's original ideas is quite likely to teach him to
   a. insist on high standards.
   b. rebel against adults.
   c. follow others' suggestions.
   d. take responsibility for himself.

4. A person with a sense of inferiority has a discrepancy between
   a. his self-concept and his self-ideal.
   b. his skills and knowledge, and his self-ideal.
   c. his skills and knowledge, and his self-concept.

5. Extensive practice is relatively unimportant when the learner has
   a. readiness.
   b. understanding.
   c. motivation.
   d. confidence.

6. A "reward-punishment" theory of learning frequently ignores the
   a. importance of rewarding only desirable responses.
   b. fact that a reward tends to fix the response made.
   c. importance of active practice.
   d. influence of the learner's expectation on his feeling of success.

7. Evaluation of responses is especially important to
   a. provide an incentive.
   b. help the student judge whether to alter his response.
   c. reward successful effort and punish errors.
   d. counteract the student's feeling of confidence arising from the work he produces.

8. A theory of learning emphasizing reward and punishment is criticized because
   a. rewards and punishments have little effect on learning.
   b. events following a response are less important than readiness and interpretation.
   c. other consequences of a response should not be overlooked.

9. Extreme emphasis on reward and punishment leads to
   a. denying the importance of practice.
   b. emphasis on external rewards.
   c. fear of using punishment lest it upset the child.

10. Motivation depends most directly on the
    a. rewards available in the situation.
    b. degree of competition among students.
    c. goals pointed out by the teacher.
    d. pupils' goals and expectations.

11. The family which makes the child emotionally secure in preschool years
    a. gives him a good basis for later development.
    b. fails to prepare him to face later social conflict.
    c. leaves him content but lacking in normal independence.

12. As girls grow older, popularity is increasingly associated with
    a. dominance.
    b. gentleness.
    c. dependence on adults.

13. Which of these would be most likely to suggest faulty emotional development in a ninth-grade girl?
    a. Lack of interest in boys.
    b. Striving for perfection in all her work.
    c. Getting along smoothly with teachers.
    d. Strong interest in music, with only passive interest in other school work.

14. The basic vocabulary of fourteen-year-olds is in the neighborhood of ______________________ words.
    a. 4,000
    b. 10,000
    c. 30,000
    d. 40,000

15. Anecdotal records placed in the school file should be
    a. a random sample of the pupil's behavior.
    b. incidents representing unusual behavior by this pupil.
    c. incidents which raise special questions or give new evidence about the pupil.
    d. incidents in which the pupil's difficulties are exemplified.

16. Which of these methods is most difficult for the classroom teacher to interpret soundly?
    a. Guess who
    b. Sociogram
    c. Observation of incidents
    d. Self-report

17. Which of these techniques is most helpful in planning the curriculum?
    a. Sociogram
    b. Projective tests
    c. Problem checklists
    d. Anecdotal records

18. Interests considered in vocational guidance
    a. are as stable at age 12 as at any later age.
    b. are sufficiently stable at age 16 to be used in making long-range plans.
    c. are so changeable that they should be used only for planning a year or two ahead.

19. Inattention ordinarily means
    a. lack of readiness.
    b. lack of interest.
    c. poor study skills.
    d. low mental ability.

20. Intelligence tests are especially useful for revealing pupils who
    a. make good marks by striving rather than by comprehension.
    b. would do well in school if they cared about making a good impression on teachers.
    c. have high ability for intellectual tasks not stressed in school.

21. Teachers should use norms primarily in decisions about
    a. which students to promote at the end of the term.
    b. which students to study diagnostically.
    c. the pupils' vocational plans.

22. If the best possible experience were provided for all children,
    a. differences in readiness would be eliminated.
    b. children with greatest hereditary ability would remain superior.
    c. intellectual differences would be eliminated but motivational differences would determine achievement.

23. Among five superior fourth-graders who can do arithmetic at the sixth-grade level, we would expect that
    a. four of the five can read at the sixth-grade level.
    b. the average reading ability will be at the fifth-grade level.
    c. four of the five will have fourth-grade reading ability.

24. The chief fault of ability grouping is that
    a. it makes no provision for social-emotional differences.
    b. it works an emotional hardship on the less able group.
    c. it cannot markedly reduce the range of individual differences.

25. A person believing in formal discipline would argue that to improve memory one should
    a. develop good study habits.
    b. memorize many difficult selections.
    c. learn facts about the subject matter to be memorized.

26. Fred memorized a poem by Keats and a poem by Shelley. Then he practiced learning other poems by Shelley. We would expect that if tested on new and unrelated poems by Shelley and Keats
    a. Fred would show little improvement over the original test.
    b. Fred would show improvement on Shelley but not on Keats.
    c. Fred would show improvement on both Keats and Shelley.

27. Whether study of Latin affects English depends especially on the
    a. vocabulary and selections used in the Latin class.
    b. intellectual ability of the pupil.
    c. activities the student performs in the Latin class.

28. A teacher examines "process" when
    a. he asks the pupil to state the reactions that produce H_2S.
    b. he asks the pupil to state the steps needed to make H_2S.
    c. he analyzes H_2S made by the pupil.
    d. he observes the pupil making H_2S in the laboratory.

29. The child's model is ordinarily
    a. any person present when he encounters a difficulty.
    b. his parent, or teacher accepted as parent-substitute.
    c. a particular older child whom he admires.
    d. a person whose behavior he admires.

30. Stories in school readers encourage pupils to
    a. act independently.
    b. follow adult suggestions.
    c. remain passive observers.

31. When a teacher presents an attitude which is strongly contradictory to that held by a pupil, most probably the pupil will
    a. accept the new attitude if he likes the teacher.
    b. cling to his own attitude.
    c. try the new attitude provisionally.

32. When new evidence is contrary to a previous belief, most people
    a. ignore the new evidence.
    b. try to reinterpret it to support the old belief.
    c. acknowledge the evidence but cling to the old belief.
    d. shift their belief to fit the evidence.

33. Teaching new facts is especially likely to alter attitudes
    a. when the new facts contradict the facts the learner has believed.
    b. when the new facts are supported by an authority the learner respects.
    c. when the learner has known little about the issue.

34. Strong prejudice is associated with homes where the parent
    a. has firm opinions.
    b. indulges the child.
    c. allows little freedom to the child.

35. Practice on a skill is particularly valuable for
    a. improving understanding.
    b. reducing time required for each movement.
    c. developing discrimination.

36. For learning English equivalents of French words, which of these forms of practice is best?
    a. Student listens intently to phonograph record repeating word pairs while he watches a printed list of the words.
    b. Each student watches a list of words while one student after another recites the English equivalents.
    c. Each student writes the English equivalents beside a list of French words.

37. The advisable relation between early practice and explanation is this:
    a. Explanation should be introduced only after the learner has passed the random trial-and-error stage.
    b. Practice should be allowed before explanation only if it is needed to make the explanation intelligible.
    c. Practice and explanation should be alternated, in roughly equal proportion.
    d. Explanation should be offered only when the learner realizes that his form is poor.

38. "Practice makes perfect" is untrue because, when the learner practices without a teacher,
    a. practice is tedious and he will not stay with it.
    b. he fixes habits firmly even though they are partly incorrect.
    c. he gets no satisfaction or thwarting and so does not improve much.
    d. the practice is too irregularly spaced for performance to improve much.

39. In guiding the learning of a skill, it has been found best to
    a. allow errors to appear and then correct them.
    b. concentrate guidance in the early phases of learning.
    c. guide only during the later phases when the learner sees the need for help.
    d. use trial-and-error learning without guidance where possible.

40. A curriculum which makes practice incidental to the study of problem units
    a. can be expected to give properly balanced opportunities for practice.
    b. gives relatively little occasion to practice the fundamental tool subjects in a meaningful way.

c. encourages repetitious practice rather than meaningful adaptation.
d. provides insufficient practice on some reactions the student should be taught.

41. The pattern of "increasing gains followed by decreasing gains" would be expected in a learning curve showing a fifteen-year-old's progress in
a. skiing.
b. learning the names of the chemical elements.
c. improving his English grammer.
d. handwriting.

42. Which of these aspects of chemistry is best remembered?
a. Application of general principles.
b. Technical vocabulary.
c. Specific facts about compounds.
d. Skill in balancing equations.

43. A person adopts the standards of the group that
a. he is with at the time.
b. accepts him in a friendly fashion.
c. he believes he is like.

44. To operate a "group control" plan successfully, the teacher must permit the group to decide
a. all issues.
b. only those issues it will solve correctly.
c. only issues where the teacher can accept their decision.
d. only issues that do not affect their learning.

45. Allowing the student to express his disagreements with authority is especially important in teaching subjects
a. that students enter with definite ideas.
b. which arouse emotional reactions.
c. where answers are supported by reasoning.

46. Learning self-direction through group planning should
a. stretch through all grades.
b. be concentrated in elementary grades.
c. be concentrated in high school and college.

47. The accepting teacher
a. does not judge whether the pupil's work is good.
b. considers the pupil's feelings and judgments.
c. tries to provide the pupil with continual success.

48. The impersonal teacher is least effective with pupils who
a. do excellent work.
b. are discouraged.
c. seek to win reward through accomplishment.

49. Goals in school should
    a. resemble the pupil's goals in similar out-of-school situations.
    b. be easier to attain than out-of-school goals in similar situations.
    c. be stated in terms of consequences the teacher can control so as to reinforce good performance.

50. A traditional testing procedure may have the following bad effect:
    a. It provides little incentive to study.
    b. It provides the student no basis for judging which outcomes are considered important.
    c. It rewards behavior which is contrary to the objectives.

51. Tests of knowledge are especially likely to lack validity for evaluating in courses
    a. intended to alter habitual behavior.
    b. where the teacher has selected material to fit his group.
    c. where students cram for examinations.

52. To avoid the faults of tests as an evaluation procedure, tests should be
    a. used chiefly for the less important objectives.
    b. used regularly throughout the course.
    c. reserved for final evaluation at the end of the course.
    d. given little weight in marking.

53. If a pupil has had a history of success, he will probably react to his first failure by
    a. greater effort.
    b. dependence on the teacher.
    c. discouragement.

54. Tension during an activity is eliminated if the person
    a. has readiness for the activity.
    b. has emotional support from classmates and teacher.
    c. is certain he will reach his goals.
    d. is genuinely interested in reaching the goals set.

55. Anxious students perform better than non-anxious students on
    a. tests of factual memory and tests of creative reasoning.
    b. tests of factual memory only.
    c. tests of creative reasoning only.
    d. none of these.

56. Strong emotion has this effect on motor behavior:
    a. Movements of large muscles become stronger and less controlled.
    b. Movements become more sluggish.
    c. The person has difficulty remembering the general pattern of the act.

57. Which one of these does not often indicate release of aggression:
    a. Negativism.
    b. Trying to defeat others in sports.
    c. Interest in detective stories.
    d. Swearing.

58. A person who has a strong forbidden emotional impulse (say, hatred) should
    a. feel ashamed of it and try to dismiss it.
    b. keep the emotion from appearing in his actions.
    c. freely act as the impulse suggests, but then try to prevent it from returning.

59. A desire to withdraw is most likely to lead to a psychogenic ailment if the
    a. person feels ashamed to withdraw.
    b. physical situation prevents withdrawal.
    c. person yields to the impulse and does withdraw.

60. Which one of these traits do experts judge to be a serious symptom of maladjustment?
    a. Impulsiveness
    b. Unhappiness
    c. Carelessness
    d. Restlessness

61. Which one of these items do experts judge to be a serious symptom of maladjustment?
    a. Sex play
    b. Coarse language
    c. Bossiness
    d. Lying

62. Good adjustment is a matter of
    a. contentment.
    b. confidence.
    c. co-operativeness.
    d. conscientiousness.

63. An action does not show good adjustment if
    a. it is unlikely to attain its purpose.
    b. the person acts without considering the facts.
    c. the person chooses a course of action which increases his tension.
    d. the person leaves some of his needs unsatisfied.

64. A neurotic generally
    a. has strong contradictory desires.
    b. lacks significant goals and desires.
    c. is obsessed by one particular desire.

65. A shy child is regarded as fairly well adjusted if he also has
    a. marked ability and achievement.
    b. well-developed interests.
    c. defects which make it hard for him to take part in groups.
    d. good relations with adults he knows well.

66. The best therapeutic attitude is
    a. analytic and impersonal.
    b. friendly and supporting.
    c. just but critical.

67. At the adolescent level, adjustment depends most strongly on having
    a. adequate sex education.
    b. acceptance from peers.
    c. average school achievement or better.
    d. warm approval from teachers.

68. A psychologist trying to understand the significance of a delinquent's acts would be especially concerned about his
    a. religious knowledge and beliefs.
    b. history of school achievement.
    c. attitudes toward authority.
    d. understanding of principles of good conduct.

69. The typical character structure of delinquents in gangs is
    a. amoral.
    b. self-centered.
    c. conforming
    d. irrational-conscientious.

70. If a pupil is to gain the right sort of satisfaction from performing a good action, the situation should be set up so that before the action the pupil is
    a. challenged.
    b. relaxed.
    c. threatened.
    d. mildly irritated.

SCALE: ACHIEVEMENT-AFFILIATION MOTIVES

Instructions

The following items are designed to assess various aspects of the school setting as perceived by the teacher. Situations are presented which lend themselves to varied explanations or reactions depending on the teacher's background and experience.

Since the items are concerned with perception, it is extremely important that the person marking the items realize that there are no right or wrong answers and that they should be marked on the basis of general reaction or how one feels about the items.

A separate answer sheet is provided for marking your responses. There are two spaces provided on the separate answer sheet for each response. One column is labeled most and one is labeled least. Read each statement and then read the three possible responses. Choose the response with which you most agree and check the space on the separate answer sheet corresponding to the response under the column labeled most. Next choose the explanation with which you least agree and mark the separate answer sheet in the same manner.

Example: (Separate Answer Sheet)

Mr. Barnes, the superintendent, thinks his teachers should possess two main qualities: a liking for people and a superior academic background.

a. If he had to choose between them, the academic background would probably be first.
b. One quality is just as important as another.
c. A teacher is totally ineffective if she doesn't possess a liking for people.

Most		Least
(x)	a	( )
( )	b	(x)
( )	c	( )

REMEMBER: Think in terms of a general reaction or feeling about the items.

There is no time limit, but work as rapidly as possible. Please respond to each item.

....

Key: Achievement Response, X
Affiliation Response, Y
Neutral N

....

Key

1. The secretary of the board of education visits the school once each month.

   a. He wants to do all he can to improve the school. X
   b. By knowing the school staff personally he is more acquainted with their needs. Y
   c. This has been a policy for many years. N

2. The Elmdale School is changing from a six-period day to a seven-period day.

   a. The students would like more opportunity for school social activities. Y
   b. For the past few years the trend has been in the opposite direction. N
   c. This is one method for academic improvement. X

3. Tom J., a senior, has missed very few days of school within the last three years.

   a. He has had no reason to be absent. N
   b. He wants to have an outstanding academic record in high school. X
   c. This has earned him considerable admiration from fellow students and teachers. Y

4. Mary T., an English teacher, attends faculty meetings fairly regularly.

   a. She likes to be with her fellow teachers as much as possible. Y
   b. She feels that some faculty meetings have very little value. N
   c. She wants to learn new ideas concerning teaching at every possible opportunity. X

5. Robert D., a principal, voluntarily teaches classes in chemistry.

   a. He can know his students much better through classroom activities. Y
   b. He is doing this only until the teacher shortage is relieved. N
   c. He considers himself well qualified as a chemistry teacher. X

6. Henry G., a senior, was voted best all-around student.

   a. This was two consecutive years for Henry. N
   b. Henry is very outstanding academically. X
   c. This was quite helpful for Henry since he wanted to know many of the other students better. Y

Key

7. Jack K., an industrial arts teacher, is a member of a club which builds boats as a hobby.

   a. This provides him an opportunity for creativeness. X
   b. He has been a member for several years. N
   c. He uses this means of establishing more positive relations with his students. Y

8. Jack M., a junior, wants to earn some money as well as visit his friends during the summer.

   a. He feels that financing his own way through high school is a mark of distinction. X
   b. The girls in his high school like to date boys who have money to spend. Y
   c. His parents demand that he do this. N

9. Norman S., a social studies teacher, uses the discussion method of teaching exclusively.

   a. He feels that students have warmer feelings toward their teacher when this method is used. Y
   b. The objectives of social studies demand use of the discussion method. N
   c. He has greater success with this method than any other. X

10. Bill R., an art teacher, enjoys being with those teachers who have a diversity of interest and enthusiasm for doing things.

    a. This has been true of him ever since he was quite young. N
    b. Bill is more versatile than the average teacher. X
    c. Bill is considered one of the friendliest teachers. Y

11. John S., a superintendent, who has a very successful school system, is a member of the Rotary Club.

    a. One reason for his success is his knowledge of the needs of the community. X
    b. This gives him an opportunity to know people in the community. Y
    c. He plans to retire in just a few years. N

12. Johnny K., a sophomore, enjoys social activities but works very hard on the athletic field.

    a. A girl, whom he would like to date, likes athletics. Y
    b. This is the first year he has participated in the athletic program. N
    c. The school's outstanding athlete is eligible for a four-year college scholarship. X

Key

13. Mary C., a math teacher, attends Summer School once every four years.

    a. She wants to stay up with the latest developments in mathematics. X
    b. She likes the social life at Summer School. Y
    c. She is probably required to do this. N

14. Clara H., the school cafeteria manager, serves the elementary children personally.

    a. She likes to visit with the children. Y
    b. She has a shortage of assistants. N
    c. She finds ways of improving the service through this method. X

15. The school counselor always has time to talk with students about their academic and personal problems.

    a. He devotes full time to guidance work. N
    b. He knows that personal problems must be taken care of before the student can be academically successful. X
    c. This is the best way to establish warm friendly relations with the students. Y

16. Sallie C., a student, has been selected by her classmates to represent them in a speech contest.

    a. She is an excellent speech student. X
    b. Her classmates feel that she is probably the most friendly and congenial student. Y
    c. She is a senior. N

17. Ellen K., a freshman, is afraid she will be punished by the principal.

    a. She is very much upset that her friends did not help her out of the situation. Y
    b. She seems to be afraid of everyone. N
    c. She tries very hard to be an outstanding student. X

18. Tom P., the custodian, comes to work early so that he can take a coffee break.

    a. He isn't allowed time off unless he makes it up. N
    b. This is one of the reasons that the community feels fortunate in having so successful a custodian as Tom. X
    c. Many of the teachers are Tom's personal friends and he likes to have time to talk with them. Y

Key

19. Martha P., the school nurse, was offered a different position this year but refused to accept it.

    a. She started the present program and considers it quite outstanding. X
    b. Her closest friends wanted her to stay. Y
    c. Housing is difficult to find. N

20. Norma D., the school secretary, would like to continue for a short time in her present position.

    a. A change would be very expensive. N
    b. Her competency has continuously improved. X
    c. The school situation has provided her with many pleasant personal associations. Y

21. Mary C., a home economics teacher, is a class sponsor.

    a. She is very much in favor of providing for the social needs of the student. Y
    b. The extra-curricular duties are made on an assignment basis. N
    c. She likes to see students get things done. X

22. The Elmdale school system has a great number of applications for teaching positions.

    a. It advertises quite widely. N
    b. It is noted for its high academic standards. X
    c. Most of the applicants make note of the congenial and cooperative attitude existing among the faculty members. Y

23. J. D., the athletic coach, would like all students to attend inter-school athletic contests.

    a. This seems to improve the general feeling of friendliness among the students. Y
    b. He feels that a large attendance encourages the team to win. X
    c. Only 50 per cent attended last year. N

24. Hazel M., a commerce teacher, assists her students in finding jobs.

    a. She believes an ideal commerce department should provide this assistance. X
    b. This improves her personal relationships with the students. Y
    c. Each teacher does this since there is no general placement service in the school or community. N

Key

25. Sam K. would like to take a year's leave of absence from his teaching duties and travel.

    a. Travel adds a great deal to the teacher's insight. X
    b. Several of his long-time friends live in countries outside of the United States. Y
    c. He can afford to do this. N

26. The Administration encourages all faculty members to attend P.T.A.

    a. Meetings are held only once a month. N
    b. They feel this to be one of the best methods for improving the teachers' knowledge of community resources. X
    c. Parents like to know the teachers personally. Y

27. Mr. S. has been a member of the Board of Education for many years.

    a. As a board member, he is admired by most of the people in the community. Y
    b. No one has opposed him for election. N
    c. He believes in the continuous improvement of the schools. X

28. Helen N., who is a very successful home economics teacher, belongs to several social clubs.

    a. She enjoys being with different groups. Y
    b. She belongs but doesn't attend too often. N
    c. She presents several excellent programs each year. X

29. The Elmdale school is very proud of its P.T.A.

    a. Most schools have some sort of Parent-Teacher Association. N
    b. The school system wanted to improve their state rating. X
    c. The other social activities in the community were rather limited. Y

30. The principal placed a sign on the bulletin board which read "This school emphasizes success and friendliness."

    a. He places a great deal of emphasis on mottos and slogans. N
    b. The average level of achievement needs improving. X
    c. Many of the students should associate more with the other students. Y

Appendix C

INVENTORY: TEACHER ATTITUDE, Form II

This inventory consists of 55 items to sample teachers' attitudes toward the various aspects of the teaching profession. It is intended that each item touch upon some controversial issue; therefore, there are no right or wrong answers. What is wanted, is your feeling about each item. Read each item and decide how you feel about it. Mark your response on the accompanying Minnesota Teacher Attitude Inventory answer sheet.

If you strongly agree, blacken the space under "SA."
If you agree, blacken the space under "A."
If you are undecided or uncertain, blacken the space under "U."
If you disagree, blacken the space under "D."
If you strongly disagree, blacken the space under "SD."

In responding to these items, think in terms of the general situation rather than specific ones. There is no time limit but work as rapidly as you can. Please respond to every item.

Your responses are to be used for research purposes only. Be certain to write your name on the answer sheet.

SA - Strongly agree
A - Agree

U - Undecided or uncertain

D - Disagree
SD - Strongly Disagree

....

1. The administration is very reasonable in its demands on my free time.

2. If I go back to college, I would rather take more courses in education than in some other subject-matter area.

3. I am required to spend too much time in community activities.

4. I prefer that my students develop good social attitudes rather than be "A" students.

5. The parents of my students are indifferent about their children's schooling.

6. The administration has made very little effort to raise the community's respect for us as teachers.

7. The community places excessive restrictions on the personal lives of teachers.

8. A teacher should take most of his graduate work in education.

9. I prefer to arrange my course content to fit the needs of the students.

10. I get more undesirable class assignments than do most teachers.

11. This community is indifferent to the work that teachers are doing.

12. My school needs a better professional library.

13. I have seriously considered changing my occupation.

14. My evaluation of a student's work is more helpful to him than his own evaluation of his work.

15. The parents of my students are very concerned with their children's progress in school.

16. The community demands more of my free time than I like to spend.

17. I do not know of a single occupation that I prefer to teaching.

18. The administration has done very little towards providing me with opportunities for a desirable social life.

19. It isn't professional for a teacher to have outside employment.

20. The teaching profession has very little prestige in my community.

21. In-service education programs are of tremendous value to teachers.

22. It is best to minimize the student's feeling of competition in the classroom.

23. I have as much freedom of action in the community as have members of other professions.

24. The administration requires me to spend too much of my time sponsoring cocurricular activities.

25. I have all the teaching aids needed for effective teaching.

26. I have to be very careful of my behavior in this community.

27. Teachers should not be allowed to earn money by performing nonprofessional jobs around the school.

28. More learning appears to take place when my students evaluate themselves than when I evaluate them.

29. This community does not place undue restrictions on my personal life.

30. Teachers' organizations have done a great deal for the profession.

31. My community holds the teaching profession in high regard.

32. The administration has not assisted me in maintaining outside professional contacts.

33. Self-evaluation is more helpful to my students than my evaluation of them.

34. This community is extremely cooperative with the teaching profession in educational matters.

35. My classroom is not at all adequate.

36. Subject-matter courses help me more as a teacher than do education courses.

37. My students' parents aren't interested in school affairs.

38. The administration of my school is extremely autocratic.

39. I am not paid enough to be able to live as I should.

40. The administration should arrange for more teachers' meetings.

41. Student rivalry has no place in my classroom.

42. My students learn most when there is keen competition in the classroom.

43. My standard of living is quite satisfactory.

44. I have never regretted my decision to become a teacher.

45. Teachers should have more to say in the running of this school.

46. I want my students to become well-adjusted citizens rather than skilled in subject matter.

47. Teachers' conventions don't accomplish anything professionally.

48. The community does not make undue demands on my free time.

49. The administration has made no effort to reduce the community's restriction on teachers' private lives.

50. The administration takes up too much of my time with teachers' meetings.

51. My teacher's salary is enough to live on quite well in this community.

52. Teachers should be allowed to engage in business activities.

53. I prefer to stress the learning of subject matter more than the acquisition of social skills.

54. I yet have to find anything of value in the professional journals.

55. Petty politics are too prevalent in my school.